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**October 1949****IN THIS ISSUE**

The Efficient Use of Carbide Burs and Diamond Points for Cavity Preparations. Part One .....	442
Entothal Sodium and Nitrous Oxide-Oxygen Anesthesia as a Dental Office Anesthetic..	449
aneurysm with Diffuse Infection .....	452
eriodontia in General Practice .....	454
Removal of a Mandibular Third Molar Tooth Impacted in a Mesioangular Position .....	458
Clinical and Laboratory Suggestions .....	460
The Editor's Page .....	462
Medicine and the Biologic Sciences .....	463
Contra-Angles .....	468
Architecture of Human Mandible and Maxillae .....	473
Goals of Psychiatric Principles in Dentistry ....	477

A Complete Table of Contents appears on page 441)

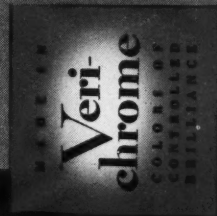


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# Dental Digest

OCTOBER 1949

Registered in U.S. Patent Office

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The Efficient Use of Carbide Burs and Diamond Points for Cavity Preparations, Part I <i>N. Henry Larson, D.D.S.</i>	442
Pentothal Sodium and Nitrous Oxide-Oxygen Anesthesia as a Dental Office Anesthetic <i>M. Solomon, D.D.S.</i>	449
Aneurysm with Diffuse Infection <i>Joseph E. Schaefer, M.D., D.D.S., and Ralph C. Rudder, M.D., D.D.S.</i>	452
Periodontia in General Practice <i>Marvin M. Sugarman, D.D.S.</i>	454
Removal of a Mandibular Third Molar Tooth Impacted in a Mesioangular Position <i>Stewart Everson, B.A., D.D.S.</i>	458
Clinical and Laboratory Suggestions	460
1. Operative Pliers for Distal Surfaces. 2. Removing Salivary Calculus From Dentures. 3. A Simple Wedge for Concave Gingival Margins. 4. An Adjustable Water-Air Spray. 5. Trimming Prophylactic Brushes. 6. Fitting of Jacket Crowns, Inlays, or Gold Crowns.	
The Editor's Page	462
Contra-Angles	468
Medicine and the Biologic Sciences	463
Architecture of Human Mandible and Maxillae (An Abstract) <i>Alfred Gabriel, D.D.Sc.</i>	473
Goals of Psychiatric Principles in Dentistry (An Abstract)	477

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# The Efficient Use of CARBIDE BURS

## and DIAMOND POINTS for Cavity Preparations

### Part One

N. HENRY LARSON, D.D.S., New York

#### DIGEST

Dentistry has reached a high standard in our restorations, inlay technique, and crown and bridge procedures. Research and experiment have developed methods and materials making accurately-fitting, functional, hygienic, and esthetic restorations possible. In the past, however, dentists have been handicapped by the lack of proper tools with which to accomplish the most difficult part of these techniques, namely the preparation of the teeth to receive restorations.

Both carborundum points and steel burs have many disadvantages for use in shaping the hard

tissues of the teeth. To complete a perfect preparation with these inefficient tools the operator must be exceptionally skillful and he must have patient cooperation. Recently, however, tungsten carbide burs have been made available for dental use. These burs, with the addition of the diamond instruments, provide proper tools for doing precision work rapidly with (1) a minimum of discomfort to the patient and (2) less difficulty for the operator. An illustrated description of these instruments is given herein and step-by-step directions for their application in a variety of situations.

#### Choice of Instruments

1. The superior cutting ability of carbide burs, as compared to steel burs, is demonstrated. The sharp drop in the cutting power of steel burs renders them useless in a short time.

In preparing teeth the dentist is confronted with tissues and materials of varying densities. Enamel, dentine, cementum, amalgam, and other fill-

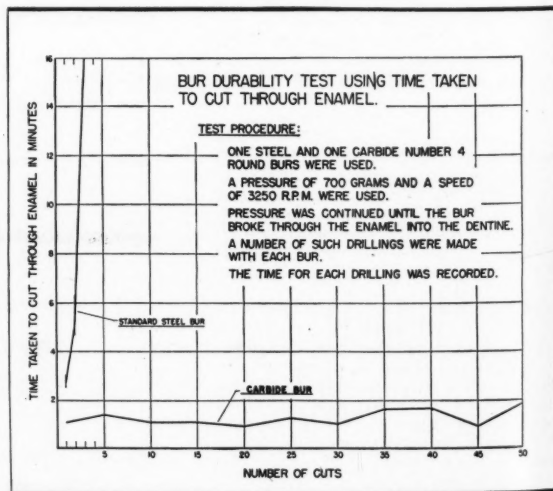
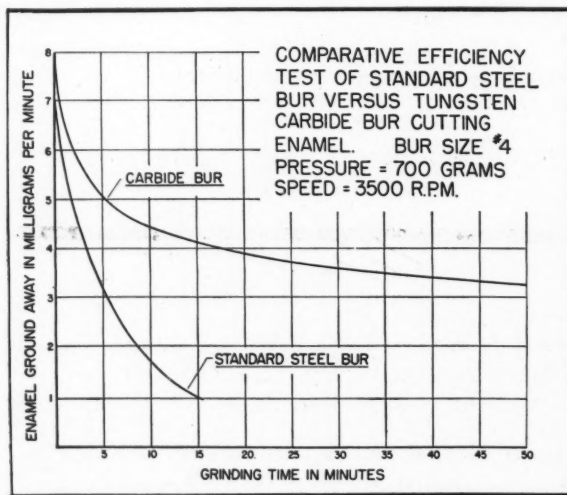
ing materials must be dealt with. Both carbide burs and diamond points will cut any of these tissues or materials. Diamonds, which are the hardest substance known, will naturally cut enamel better than carbide and should, therefore, be the instrument of choice in cutting this tissue. As diamond instruments have a greater tendency to smear when used on softer tissues, the carbide bur is ideal for the less dense dentine, cementum, and filling materials.

#### Advantages of Carbide Burs

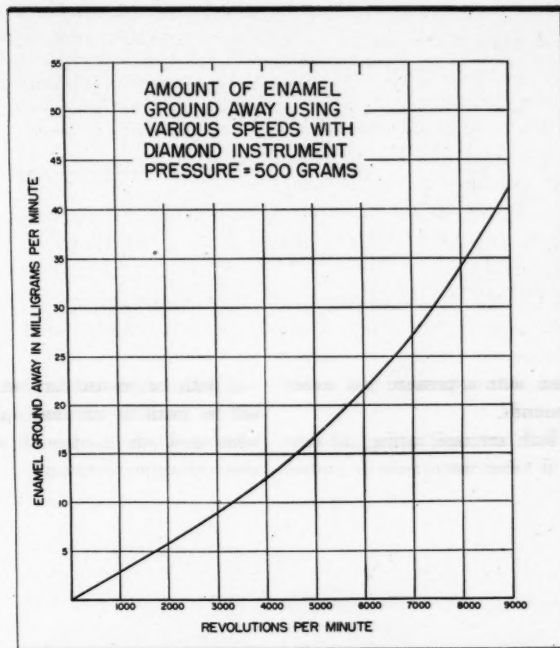
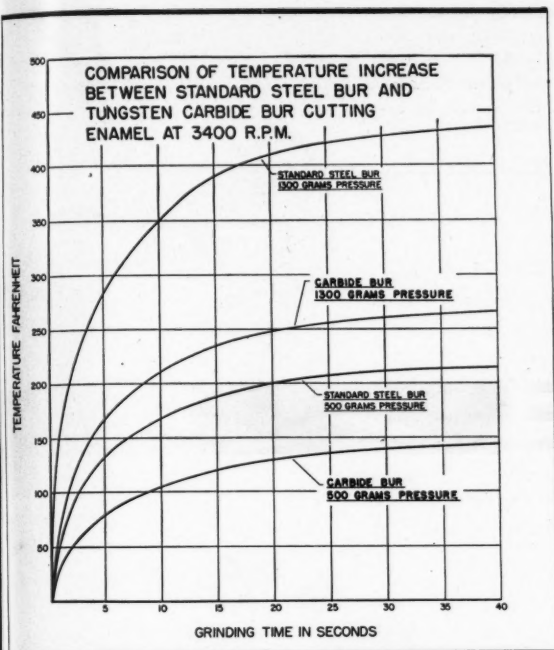
The superior cutting ability and wearing quality of carbide burs has been shown by comparative tests with other instruments (Figs. 1 and 2).

That less heat is generated by the carbide bur than by the steel bur has

2. At the fiftieth cut the carbide bur cuts faster than the steel bur cuts at first. In practice, the steel bur would be discarded after the first cut. A peculiarity of carbides is, as a study of the graph will show, that they tend to rehabilitate themselves.







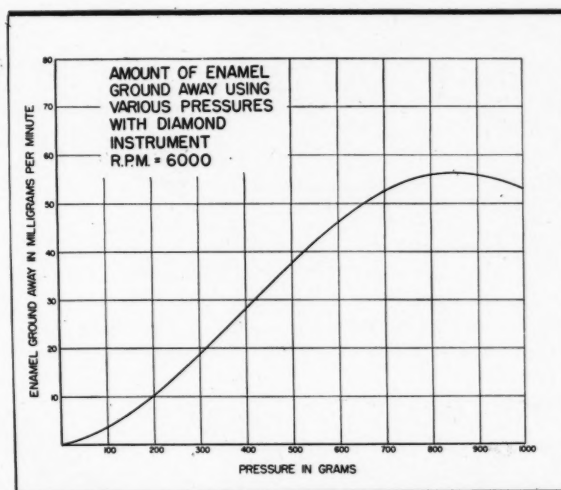
### 3. Carbide burs generate less heat than steel burs.

also been demonstrated by comparative tests (Fig. 3).

## Fundamental Rules for the Use of Carbides and Diamonds

If they are to function with maximum efficiency, certain basic rules

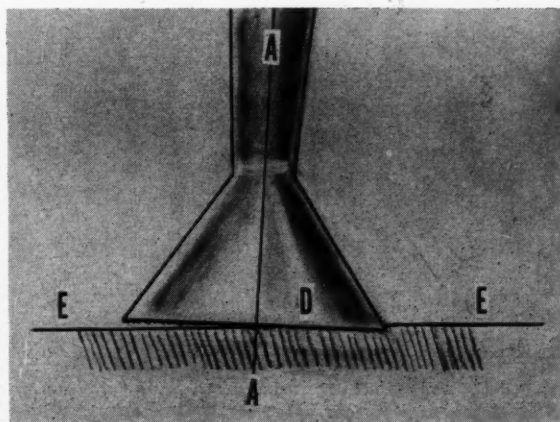
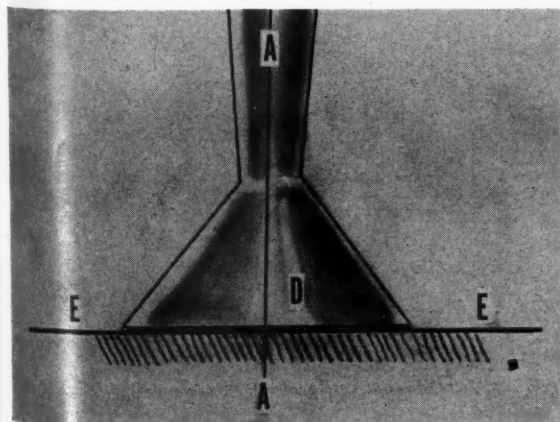
**6. Incorrect use of diamond instrument.** Diamond point *D* revolving on axis *A*, against enamel surface *EE*. The periphery of *D* will cut faster than it will at center *A*, causing the instrument to ride at the center.



**4. The cutting ability of diamond instruments increases as the number of revolutions is increased.**

**5. Peak grinding efficiency is reached with a light pressure; approximately 850 grams, less than two pounds. (30 grams equal 1 ounce).**

**7. Correct use of diamond point *D*.** Instrument slightly canted to permit efficient use of fast cutting periphery.



must be observed in using both carbides and diamonds:

1. Both require high speed. The cutting ability of a diamond instrument is accelerated as high speed is used (Fig. 4). The same is true of carbide burs. In commercial use diamond and carbide tools are used at speeds up to 50,000 revolutions per minute.

2. Both should be used with light pressure. Figure 5 demonstrates that maximum grinding efficiency is reached with a pressure just under two pounds.

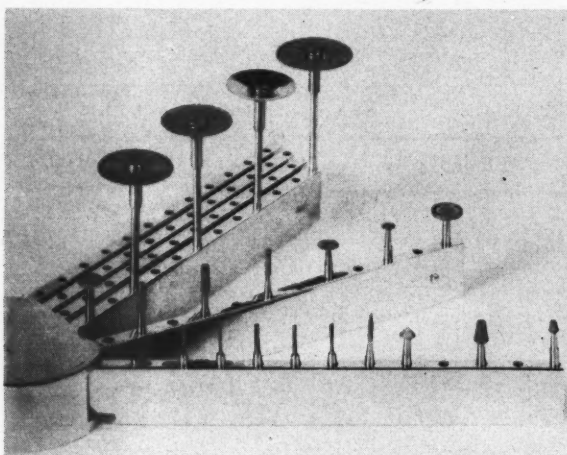
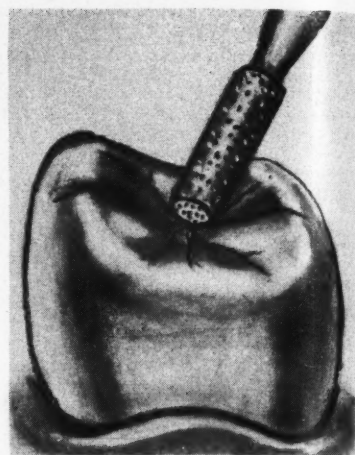
3. Both are rapid cutting and care must be taken not to come in contact

**8. Poor selection of instruments for specific requirements; only the circumference at the tip of the instrument is being used; the circumference of the instrument is too small for effective cutting.**

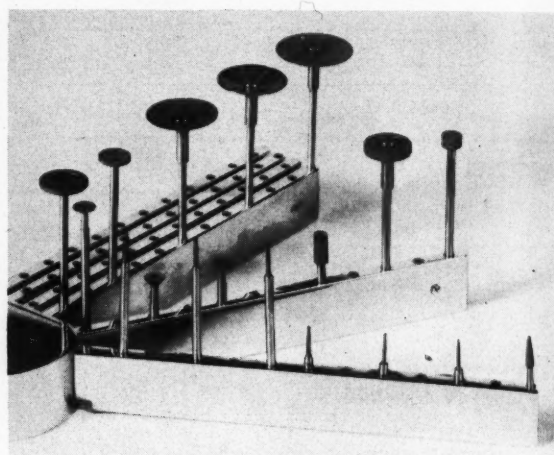
with surfaces outside the field of preparation.

4. For better control both the carbide bur and the diamond point should be used with a drag rather than a push movement.

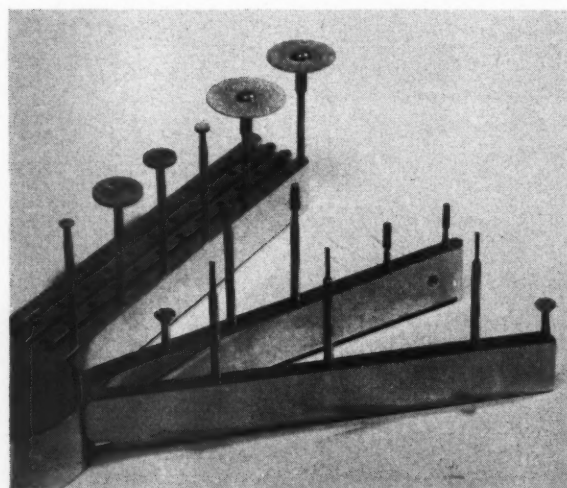
5. Both can be used dry but they will be found to cut more rapidly when used with a spray of water, either automatic or manual.



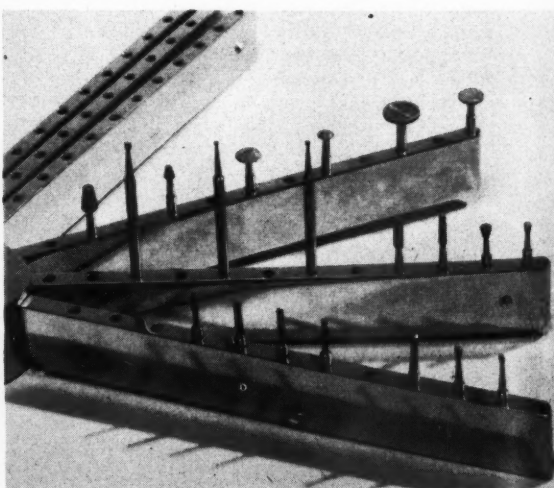
**9. Block set up with instruments needed for inlay preparations. Instruments are kept together as a unit.**



**10. Block set up with instruments needed for  $\frac{3}{4}$  veneer and full crowns.**

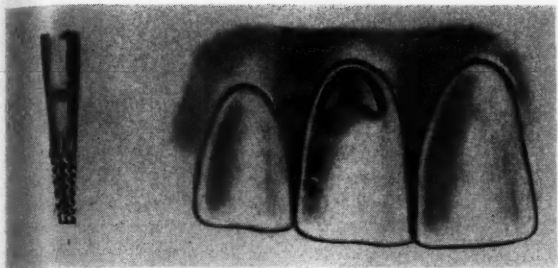


**11. Block set up with instruments needed for anterior jacket crown preparations.**

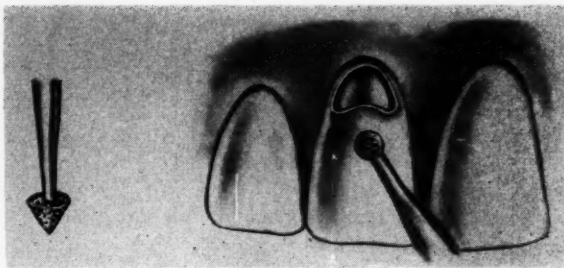


**12. Block set up with instruments needed for amalgam preparations.**

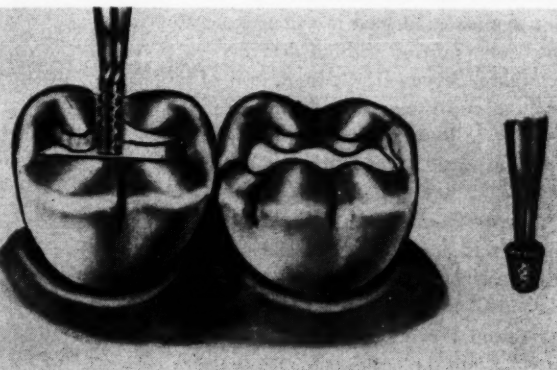
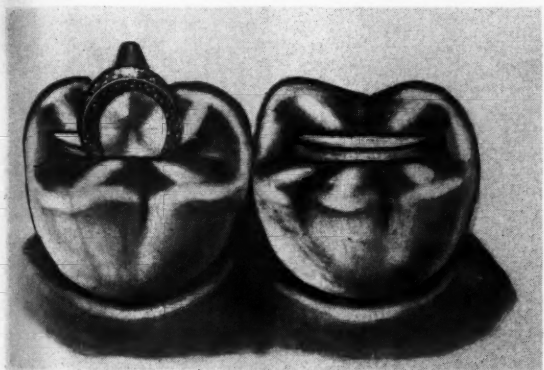




**13.** A taper carbide bur is used to open and contour a gingival cavity for inlays. For silicate or amalgam, inverted cone carbide bur is used.

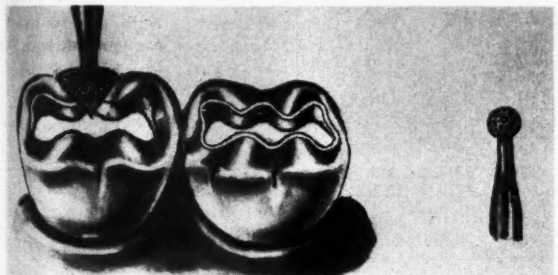


**14.** Cavo-surface bevel for gold inlay preparations is made with pyramid or round diamond point.



**15.** Simple occlusal preparation. The wheel diamond point, in a right angle handpiece, is used to open an occlusal fissure. The largest wheel commensurate with the tooth substance to be removed is used.

**16.** Auxiliary fissures are opened with a carbide cylinder bur. Where extensive removal of enamel is required a truncated diamond point is used instead of a cylinder bur.



**17.** Where cavo-surface bevels are desired a pyramid or round diamond point is used to make the bevel.

### Advantages of the Water Spray

1. The water clears away the debris from the cutting field and minimizes smearing of the instrument which reduces cutting efficiency.
2. The water also permits almost continuous operation by negating the small amount of heat the instruments generate.
3. The obstruction of vision occasioned by a water spray is too slight to be of material inconvenience.

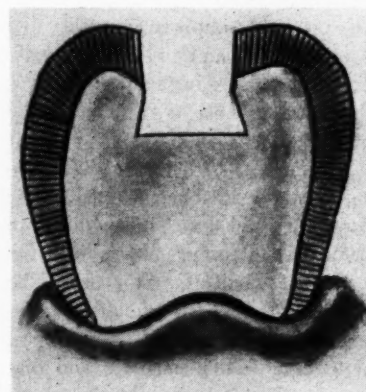
### Selection of Diamond Point Instruments

The selection of the proper diamond point to do a specific part of a preparation must be governed by the

conditions. Diamond points have been designed in various shapes and sizes. Obviously the instrument with the larger circumference will cut more rapidly than one with a smaller circumference. It is therefore of advantage to use the largest instrument possible in relation to the location and the amount of enamel to be removed.

**Small Diamond Instruments**—The so-called diamond burs are not entirely efficient. This is readily understandable as the surface available for diamond chips is limited. Because of the small surface, the material used for binding is also limited. The tenure of these small instruments is therefore problematical. The carbide bur

**18.** Cross-section of amalgam preparation. After the initial opening of occlusal with wheel diamond point, an inverted cone carbide bur or diamond point is used to give proper form to the cavity.



is a good replacement for the small diamond instrument.

*Cutting Efficiency Affected by the Position of the Instrument*—Certain shapes of diamond instruments have little cutting efficiency when used in incorrect positions (Fig. 6).

*Figure Six*—E represents an enamel surface with a flat surface diamond, D, being rotated against it on axis, A. The outer cutting surface of D is faster cutting than the center portion, near the axis. The result is that when such an instrument is held flat against a surface it will ride on the center portion without delay.

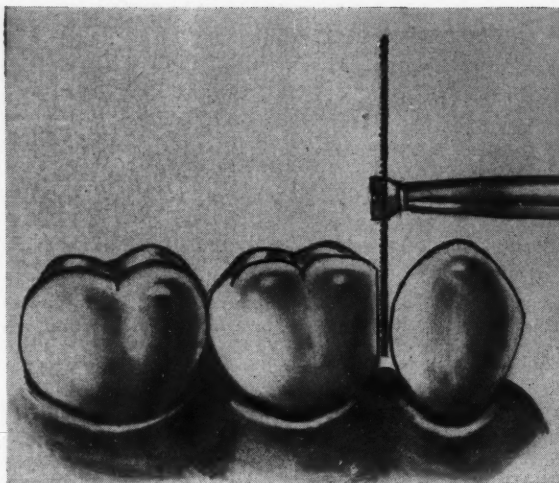
*Figure Seven*—The proper use of such an instrument is illustrated in Figure 7. It is held at a slight tilt and the rapidly revolving periphery is used to do the cutting.

*Figure Eight*—The cylinder diamond was not designed to have the periphery of the end used to the exclusion of the rest of the instrument. To select a cylinder diamond point to open into the occlusal fissure is inefficient and wasteful for two reasons: 1. The circumference of the tip is not large enough to allow for many diamonds to work. 2. The excessive wear on the part of the instrument used will reduce the cutting power of that part of the instrument long before the rest of the instrument has been expended.

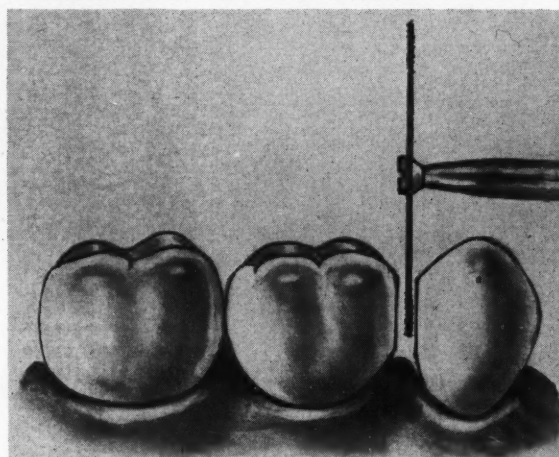
### **Diamond Points and Carbides Aid in Conserving Time**

As a rule, dentists are unsparing of the knowledge, ability, and the time they devote to their patients. Most dentists are eager to gain knowledge and to improve in skill; but some dentists can be accused of laxity and wastefulness in the use of time, a disadvantage both to the dentist and to the patient.

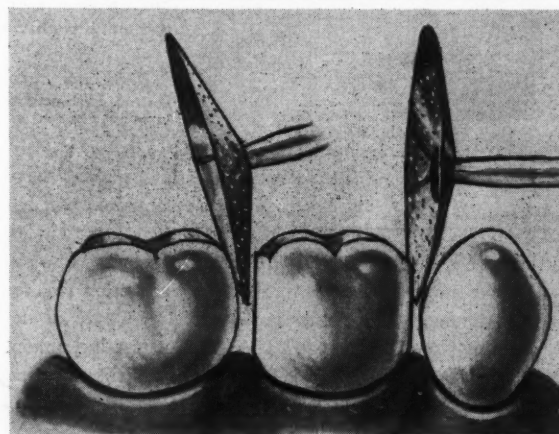
*A Plan of Procedure*—Like the surgeon who is about to operate, the dentist should have in readiness a definite plan for preparing teeth for a special kind of restoration. The instruments needed should be assembled and prepared in advance. With long lasting carbides and diamond points it is possible to set up



**19.** For slice preparation a safe-sided disc is used from occlusal to gingiva. The disc is held at an angle to prevent undercutting of slice.



**20.** Where two adjacent teeth are to be prepared by slicing, a disc with diamonds on both sides of the periphery is used. After the initial cut through is made, the disc is tilted to the proper angle to slice each tooth.



**21.** Convex and concave diamond discs are used where, because of the position of the teeth or the oral opening, the prevention of slice undercutting is not possible with a straight disc. For distal surfaces of molars the convex disc is especially useful.

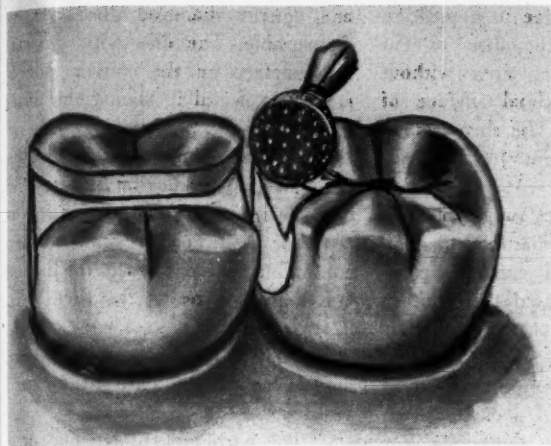
a block of the instruments that may be needed for a type of preparation and have them placed on the bracket table confident that the operation can be continued without reaching into the cabinet for a replacement.

*The First Instrument Selected*—In

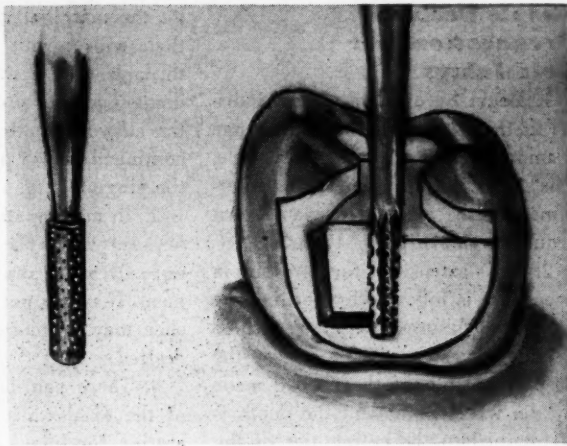
using the sets of instruments much valuable time can be saved if the first instrument selected is the one which will remove the largest bulk of tooth that needs removal.

*Full Utilization of Each Instrument*—Time is also saved if each instru-

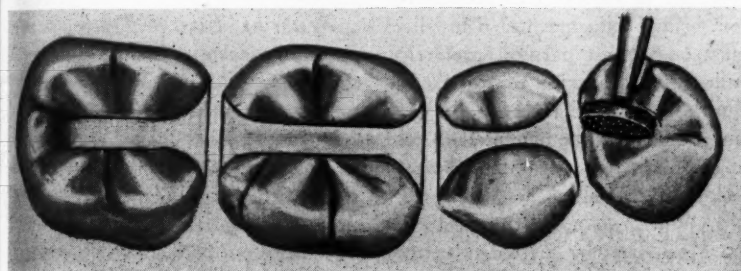




22. A wheel diamond point is used to open the occlusal surface, flaring the walls toward the lingual and buccal as the sliced interproximal surfaces are reached.



23. A carbide fissure bur which is used to open and extend occlusal auxiliary fissures is used to form the interproximal step. Cylinder or taper diamond points may also be used for this purpose.



24. Where several teeth in the same quadrant are to be prepared, each instrument is used on the teeth before a change of instruments is made.

ment is utilized to do all the work on the preparation that it is capable of doing before it is replaced. Changing back and forth takes time.

#### Method of Sterilizing Instruments

—When the work at hand is completed the following steps are taken: 1. The individual instruments are cleaned. 2. They are replaced in the block. 3. The entire block and its contents are sterilized. The block is then ready for the next similar type of preparation.

**Figure Nine**—A block of instruments set up for inlay preparation.

**Figure Ten**—A block of instruments set up for  $\frac{3}{4}$  veneers and full crowns.

**Figure Eleven**—A block of instruments set up for jacket crowns.

**Figure Twelve**—A block of instru-

ments set up for amalgam and silicate restorations.

#### A Quick Precision Method of Preparing Teeth

Most preparations follow a set general outline. For the purposes of demonstration, the following descriptions are made on sound teeth. It is assumed that caries has been removed in the usual manner and the lost tissues replaced with a hard cement.

#### Gingival Cavities and Gold Inlay Preparations

Gingival cavities usually do not present sufficient sound enamel to make the use of a diamond instrument advantageous. Carbide taper bur #702 is used.

1. Maintaining a controlled even depth, the bur is moved to sound areas of enamel to give proper form to the cavity.

2. The taper bur, held perpendicularly to the tooth surface, gives the desired flare to the walls of the preparation.

3. The floor should follow the contour of the tooth, roughly the contour of the pulp chamber (Fig. 13).

**Added Retention**—Where the lack of permissible depth makes retention of an inlay problematical, added retention may be obtained by sinking pin pits at the mesial and distal extremities of the floor with a #701 bur. Care must be taken to avoid pulpal involvement.

**Acrylic Inlays**—No bevel is used for acrylic inlays. Acrylics require more depth (1) for retention and (2) to allow for proper color matching.

**Amalgam and Acrylic Restorations**—For (1) amalgams in the posterior teeth and (2) for acrylics in the anterior teeth the following steps are taken:

1. Start with an inverted cone bur.

2. When the retentive form of the inner part of the preparation has been obtained the shank is tilted slightly toward the periphery of the cavity to give the cavo-surface half of the walls their desired parallel form.

### **Simple Occlusal Preparations for Gold Inlays**

1. Begin by opening the mesiodistal fissure with a wheel or knife edge diamond point in the contra-angle. The size of the wheel selected is determined by the amount of enamel that requires removal (Fig. 15).

2. The extension for prevention procedure is followed by opening the auxiliary fissures with a carbide cylinder bur. Start is made at the deepest portion of the groove made by the wheel point and the depth is maintained to the extremities of the fissures. By tilting the shank, a slight flare is imparted to the walls as the bur progresses (Fig. 16).

(Where caries has been extensive and it is necessary to remove more enamel the truncated taper diamond point may be substituted for the cylinder bur if desired.)

3. Cavo-surface angles of the preparation may be beveled, if desired, with a pyramid or round point (Fig. 17).

4. For acrylic inlays no bevel is used. The acrylic inlay requires greater depth to provide for masticatory stress.

5. For amalgam, the inverted cone bur is used following the opening of the mesiodistal fissure by the wheel diamond point. By tilting the bur proper axial form can be given to the walls, as shown by cross section illustration (Fig. 18).

### **Two or More Surface Preparations for Inlays**

*Slice Type*—1. With a safe-sided diamond disc begin the preparation

on the marginal ridge in a position that will permit the disc to cut through the contact area without damaging the proximal surface of the adjacent tooth. The slice is then continued to a point just beneath the gingiva (Fig. 19).

2. In making slices judgment must be exercised. The diamond disc is an extremely rapid cutting instrument. If care is not used, the resultant slice may be more extensive than is desired.

3. There can be no undercutting of the axial walls of a cavity preparation for inlays or abutments. For this reason the angle at which the disc is held must be predetermined. This is especially important (1) where an MOD preparation is to be made or (2) where two or more teeth are to be sliced in preparation for bridge attachments. The slices must be at least parallel, preferably with a slight tapering toward the occlusal. The parallel slicing of teeth is not difficult if the handpiece is held in approximately the same plane in making all the slices.

4. When two contacting teeth require restoration, the edge cutting diamond disc with diamond chips at the periphery of each side may be used, thus slicing both teeth with one operation (Fig. 20).

5. When the contact point has been removed, the disc may be moved to slice first one tooth to the desired angle and dimensions, and then the other.

*Slicing the Distal of Molars*—1. Where it is difficult to obtain proper handpiece position to make a slice without undercutting, the concave

and convex diamond discs are indispensable. The disc with the cutting surface on the convex side is especially useful in slicing the distal of molars (Fig. 21).

2. The wheel diamond is used to cut into the mesiodistal fissures. As the sliced interproximal surface is reached, the wheel is brought in a continuous curve toward the buccal and lingual edges of the slice (Fig. 22).

3. The auxiliary fissures are opened as in the case of occlusal preparations.

4. The carbide cylinder bur or a cylinder diamond point is used to form the interproximal step (Fig. 23).

5. Occlusal cavo-surface beveling is accomplished as in occlusal preparations.

*Restoring Several Teeth in the Same Quadrant of the Mouth*—A great deal of time can be saved by using diamonds and carbides and following a methodical plan where two or more teeth in the same quadrant of the mouth require restorations. Each instrument is used to its full utility on the teeth to be restored before it is replaced by the next instrument (Fig. 24).

*Full Mouth Rehabilitation*—In cases of full mouth rehabilitation and in so-called bite raising cases, it is entirely feasible to prepare two quadrants of the posterior teeth at one sitting, especially if the time-saving hydrocolloid technique is used. (To be continued next month.)

2 East 54th Street.

\*Graphs shown as Figures 1, 2, 3, 4, and 5 represent the average of numerous tests made by Mr. Gosta Bjorklund, test engineer.

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## PENTOTHAL SODIUM

### and NITROUS OXIDE-OXYGEN Anesthesia

#### as a Dental Office Anesthetic

M. SOLOMON, D.D.S., Williamsport, Pa.

#### DIGEST

*Pentothal sodium in combination with nitrous oxide and oxygen has proved to the author of this article to be the anesthetic of choice in a great majority of the cases for which a general anesthetic is required in a dental office. It is the author's conviction that the dentist who will take the time to adjust through experience to intravenous anesthesia will be amply rewarded by having a valuable adjunct in his office.*

#### Indications for the Use of Pentothal Sodium Anesthesia

The physical condition of the patient and the type of dental operation to be performed should determine the choice of anesthetic. A physical examination by a physician is a wise precaution and a statement of opinion signed by the physician in reference to the patient's ability to take pentothal and nitrous oxide-oxygen anesthesia. This combination is especially indicated for the (1) resistant patient, (2) the alcoholic, (3) the extremely nervous, (4) the athletic, and (5) the robust.

#### Contraindications

Pentothal sodium and nitrous oxide-oxygen anesthesia should not be used in the presence of the following conditions:<sup>1</sup>

1. Any swelling in the throat.
2. Deep infections of the neck.
3. Any obstruction of the airway

which would increase the possibility of a laryngospasm.

4. Advanced age or extreme youth, age groups which tolerate barbiturates poorly.

#### Technique

##### Competent Assistance Required—

1. Under no circumstances should the operator attempt to manage the anesthetic and perform the surgery. 2. The anesthetic is administered by a trained anesthetist. It is highly important that the anesthetist has had training in pentothal sodium anesthesia. 3. As well as the trained anesthetist, a capable dental assistant must be available to help the oral surgeon. 4. One more assistant would be helpful but this is not always possible.

**Preoperative Measures**—1. The patient is instructed to eat a light meal the night before the operation and to take no water or food thereafter.

2. The bladder should be emptied prior to the actual operation.

3. The patient is premedicated subcutaneously about one-half hour before the operation with 1 cubic centimeter (1/150 grain) atropine sulfate. No other premedication is given.

A 2 per cent solution of sodium pentothal is freshly prepared, using triple distilled, sterile water.

**Equipment Needed for Administering the Anesthetic**—1. An ordinary wooden arm rest tied securely to the arm rest of the chair with sterile gauze wrapped around the arm rest makes a seat to which the arm receiving the intravenous anesthesia can be secured.

2. All necessary dental instruments for the successful completion of the operation are grouped on trays and covered with sterile napkins, so that when the patient is seated in the chair only the intravenous equipment of the anesthetist is visible to the patient.

3. Suitable resuscitating equipment: 1. A gas machine capable of delivering oxygen under pressure. 2. A rubber airway (Guedal). 3. Suitable analeptics.

4. A motor driven suction machine.

**Preparation of the Patient**—1. The patient is seated comfortably in the chair which is tipped back at an angle of 45 degrees.

2. The patient should be covered with a woolen blanket from the arms down exposing only the arm used for the intravenous puncture.

(The covering of the patient is for the purpose of eliminating the tremors that occasionally manifest themselves during induction.)

3. The patient is then draped with a plastic apron over which a sterile towel is placed.

#### Procedure

1. A 20-cubic centimeter glass syringe with a 20 or 22-gauge needle, approximately 50 millimeters in length, has been found satisfactory.

2. The site of the venipuncture is thoroughly cleansed with soap and water, followed by alcohol.

3. The tourniquet is applied and a venipuncture is made into a suitable vein in the arm.

4. By adding a mixture of 50 per cent nitrous oxide and 50 per cent oxygen, the amount of pentothal needed is reduced to approximately one-third.

<sup>1</sup>Roberts, Edmund P. and Brown, Angus M.: Pentothal Sodium for the Ambulatory Patient, J.A.D.A. 36:153 (February) 1948.



**A Test Dose is Administered—1.** A dose of 1 to 2 cubic centimeters is slowly injected. The patient should be carefully observed for any reactions during the administration of the test dose.

2. If the trial dose is well tolerated, after one-half minute, repeated fractional doses of 1 cubic centimeter each should be given slowly with time enough between applications to note the patient's susceptibility to the pentothal.

**Symptoms of Respiratory Depression—**The most important symptoms to watch for are (1) shallow breathing or (2) any indication of cyanosis in the patient. Either of these conditions must be corrected immediately.

**Causes of Respiratory Depression—**The following factors may be causative in respiratory depression: 1. The accumulation of blood and mucus in the throat.

**1. Tray for preparation of pentothal sodium 2 per cent equipped with the following articles:** Sterile water, ampules of pentothal, hemostat, and tourniquet; 20-cubic-centimeter glass syringes, intravenous needles, 20 to 23 gauge, 1½ inches long; mixing needle, 15 gauge, 3½ inches long; rubber airway, 2-cubic-centimeter syringe with analeptics. Note the sterilized discarded novacaine ampules used to cover the sterile intravenous needles.

2. Crowding of the tongue against the posterior wall of the throat by the throat curtain.

3. Depressing the chin.

4. Overdose of pentothal.<sup>2</sup>

5. Too rapid administration of the anesthetic.

**Preventing Respiratory Depression—**The following measures must be taken during the entire operation: 1. The blood and mucus must be

thoroughly aspirated with a motor aspirator. 2. Packs must be changed frequently. 3. The chin must be well supported.

**Degree of Anesthesia—1.** The pentothal is given until the patient exhibits drowsiness or is unable to count. Just as the patient ceases to count there is usually a deep inspiratory movement, after which breathing becomes shallow and regular if an anesthetic dose has been administered. The deeper the anesthesia, the more shallow the respirations will become. This sign is one of the most reliable indications of the stage of anesthesia.

2. In this technique the patient is kept in the lightest possible stage of surgical anesthesia, verging on the stage where the patient will give movement reflexes on the stimuli of pain.

3. When this degree of anesthesia is attained (1) a prop is placed in the mouth and (2) a mixture of 50 per

<sup>2</sup>Adams, R. Charles: *Intravenous Anesthesia*, New York, Paul B. Hober Inc., 1943, p. 29.



cent nitrous oxide and 50 per cent oxygen is given.

4. The oxygen content of the mixture is varied as required until the anesthesia is completed.

5. The needle is allowed to remain in the vein and doses of 1 cubic centimeter at a time are given slowly whenever necessary.

6. At no time has it been necessary to lower the oxygen content below 30 per cent which is an important recommendation for this type of anesthesia.

**Duration of Anesthesia**—In a test group of fifty patients whose ages ranged from 20 to 55 years, the anesthesia lasted from five to fifty-five minutes.

### **Advantages of Pentothal Sodium Anesthesia**

#### **Rapid Orientation of Patients—**

1. At the conclusion of the operation patients will orient themselves within ten to fifteen minutes.

**2. Draping of patient and venipuncture.** Note the position of the arm on the arm board attached to arm of the dental chair. The patient is covered with a blanket to prevent tremors during the induction of the anesthesia. Note the nitrous oxide gas machine and suction machine.

2. The patient should be allowed to rest in a recovery room under careful supervision for a period of thirty to forty-five minutes.

3. After the rest period the patient is allowed to go home in the company of a responsible person.

4. The patient should not be permitted to drive a car and is instructed to rest the remainder of the day.

**Many Types of Operations can be Performed**—1. Surgical operations possible to be performed under pentothal sodium and nitrous oxide-oxygen are not limited. Types of surgery using this technique range from a simple tissue impaction to a com-

plete upper and lower extraction of teeth, 22 in all, including the insertion of the immediate dentures, and the preparation of cavities for the placing of restorations.

### **Conclusions**

1. For successful results under this type of anesthesia the dentist must be thoroughly competent.

2. An experienced anesthetist, trained in pentothal sodium technique is indispensable.

3. Assistants other than the anesthetist must be highly competent.

4. The dentist who is able to fulfill the conditions outlined in the technique described for the use of inhalation anesthesia in his office, and who will accustom himself through training and experience to intravenous anesthesia will be rewarded by having a valuable dental adjunct.

4 East Third Street.



# ANEURYSM

## *with Diffuse Infection*

JOSEPH E. SCHAEFER, M.D., D.D.S., and RALPH C. RUDDER, M.D., D.D.S.,  
Chicago

### DIGEST

*This is a report of a case of traumatic aneurysm with marked respiratory embarrassment with a superimposed Ludwig's angina that was relieved by a tracheotomy. Ludwig's angina is a condition where tracheotomy is indicated. It may be described as a deep-seated infection occurring in either submaxillary space, in which the rapid extension of the infection runs ahead of localization.*

*The infection often becomes bilateral, below the deep fascia, with the symptom of marked swelling of the floor of the mouth pushing the tongue upward and backward. The patient often has an anxious expression from difficulty in breathing and swallowing.*

*The infection spreads backward to the base of the tongue with subsequent edema of the epiglottis; in uncontrolled cases it spreads downward into the mediastinum with (1) necrosis of the soft tissue along the trachea, and (2) heart involvement and collapse of the lungs.*

*It is the opinion of the authors of this article that in such cases a tracheotomy should be performed without delay. In the case history described herein, the first in a series of case histories involving a variety of surgical procedures drawn from the authors' experience, the quick recovery of the patient is ascribed to a prompt tracheotomy.*

### Case History

On February 19, 1947 a fifty-seven-year-old man was first seen in consultation. The patient presented the following: 1. Marked edema of the tongue. 2. A pulsating swelling on the right side of the neck. 3. Respiratory embarrassment to the degree that he was unable to give a coherent past history.

Examination revealed a large pulsating mass in the right cheek and submaxillary triangle.

### Diagnosis

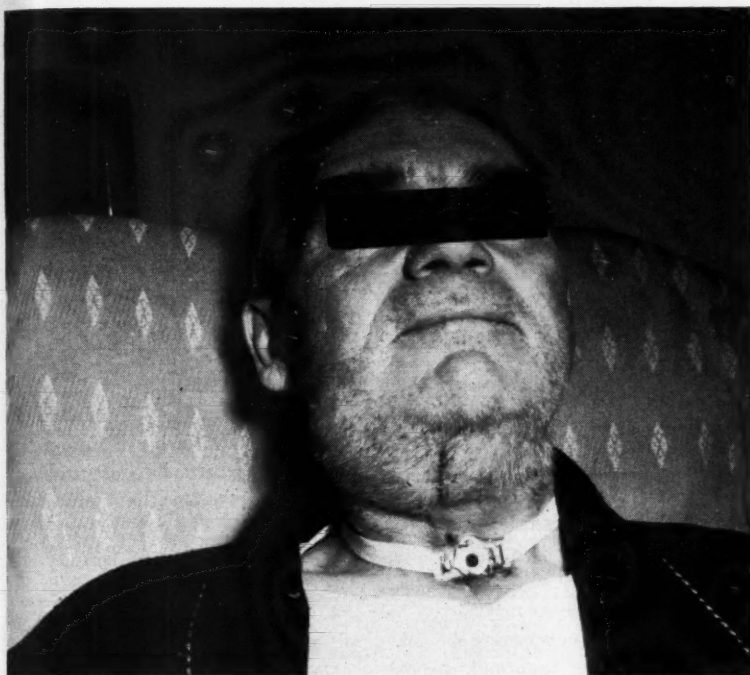
On the basis of a history of a lacerated injury to the right side of the face involving the facial artery, the pulsating mass was interpreted as a traumatic aneurysm.

(An aneurysm is a pulsating sac connected directly with the lumen of an artery, containing liquid or coagulated blood or both. Such a sac may be the result of a trauma to the artery, known as a traumatic aneurysm.)

*Symptoms*—1. The tongue was edematous and protruded toward the roof of the mouth.



1. Photograph of a fifty-seven-year-old man on the first postoperative day following a tracheotomy for the relief of respiratory embarrassment due to a traumatic aneurysm. Note that the tongue still protrudes from the massive swelling of the floor of the mouth.



2. Photograph taken on the second postoperative day. The patient is well on the way to recovery which is attributed to immediate tracheotomy.

2. The patient appeared moderately toxic with a temperature of 100.4 degrees, respiration 10, pulse 72, blood pressure 170/100.

**Progressive Enlargement**—The following day, February 20, 1947, (1) the swelling had progressed beyond the midline of the neck and extended into the left submaxillary triangle, (2) the tongue protruded from the mouth, (3) the patient experienced great difficulty in breathing, and (4) his temperature rose to 103.4 degrees.

**Blood Count**—A complete blood count revealed: 1. Hemoglobin 91 per cent. 2. Red blood cells, 4,440,000. 3. White blood cells, 9,550 (seg. 74, stabs 6). 4. Lymphocytes 12. 5. Mononuclears 8. 6. Eosinophiles 3.

**Urinalysis**—The urinalysis was acid in reaction with (1) a specific gravity of 1.020 and (2) a faint trace of albumin.

**X-ray Results**—X-ray findings were negative.

### Treatment

(1) Sulfadiazine (30 grains for the initial dose, with 15 grains every three hours) and (2) penicillin (200,000 units for the initial dose, with 50,000 units every three hours) were administered.

### Surgery

On the third day, February 21, 1947, surgery was carried out as follows: 1. A tracheotomy was performed just below the isthmus of the thyroid gland.

2. The right external carotid artery was ligated at its point of origin from the common carotid artery.

3. The submental and submaxillary regions were explored surgically without purulent evacuation.

4. An enlarged lymph node was removed from the right submaxillary region and microscopic examination revealed the usual lymph node architecture, including follicles.

**Relief Following Surgery**—1. The respiratory embarrassment was relieved immediately following the tracheotomy.

2. The following day the patient was able to sit up in bed and take nourishment.

3. The relief was so marked that the patient remarked that the tracheotomy was a life-saving measure.

**Chemotherapy Continued**—1. Penicillin and sulfonamide therapy were continued and 3,000 cubic centimeters of 5 per cent glucose and 2 units of plasma were given on February 22, 1947. 2. The existing antibiotic and chemotherapeutic regimen was augmented with 2,000,000 units of streptomycin daily. 3. This therapeutic procedure was continued for one week.

**Notable Improvement**—At the end of one week the patient was greatly improved. He was dismissed from the hospital on March 6, 1947, completely recovered. Periodic examinations since that time revealed no further complications.

### Conclusions

1. It has been the authors' experience that a delay in performing a tracheotomy in a case of Ludwig's angina often results in death of the patient.

2. The time period in cases of Ludwig's angina, because of the edema of the larynx, may often be too short for effective antibiotic and chemotherapeutic measures alone.

3. In the case of a fifty-seven-year-old man who presented for consultation with a rapidly progressing Ludwig's angina, immediate tracheotomy resulted in the patient's rapid recovery.

25 East Washington Street.  
804 West 79th Street.

# PERIODONTIA

## *in General Practice*

MARVIN M. SUGARMAN, D.D.S., Atlanta, Ga.

### DIGEST

*Although it is often the neglected aspect, the treatment of periodontal disease should be a primary part of the general practice of dentistry.*

*Most periodontal cases in their incipience are seen only by the general practitioner. To prevent the condition from progressing, the disease must be recognized, properly diagnosed, and controlled by him. When the patient is first seen by the periodontal specialist, the condition is often already extensive.*

*Because the responsibility of prevention lies with the general practitioner, he must have thorough basic knowledge of early cardinal signs and symptoms. The patient must be thought of as a whole, his mental and physical condition must be taken into consideration. (1) the general health, (2) diet, (3) occupational environment, and (4) the habits of the patient must be studied for correct diagnosis and prognosis. Consultation with the physician and a complete oral examination by the dentist will sometimes reveal the cause of many periodontal problems which might otherwise be confusing.*

*This paper demonstrates what can be accomplished by intelligent prevention and with treatment for the average periodontal problem.*

### Initial Examination

The first examination should include the following:

1. A careful case history.
2. Information concerning the general physical condition and dietary habits. A weekly food chart of everything the patient eats is helpful.
3. A thorough diagnostic study which should include (1) complete roentgenograms, (2) transillumination, and (3) study casts.
4. An examination of the mouth in which a periodontal probe is essential. In an examination of the mouth (1) alinements and (2) formations and malformations must be carefully noted and charted.

### Recognition of Traumatic Occlusion

The most important symptom in the early recognition and prevention of periodontoclasia is that of traumatic occlusion. Traumatic occlusion is a cause, as well as a result, of periodontal disturbance. Any abnormal stress producing, or capable of producing, changes in the periodontal membrane should be considered traumatogenic and should be relieved<sup>1</sup>. Classification of traumatic occlusion by Box<sup>2</sup> and Sorrin<sup>3</sup> and study of early diagnosis by Blass<sup>4</sup> has greatly advanced

<sup>1</sup>Stillman, P. R., and McCall, J. O.: Clinical Periodontia, Ed. 2, New York, The Macmillan Company, 1937.

<sup>2</sup>Box, H. K.: Traumatic Occlusion and Traumatogenic Occlusion, Oral Health 20:642-646 (July) 1938.

<sup>3</sup>Sorrin, S.: Traumatic Occlusion, Its Detection and Correction, DENTAL DIGEST 40:170-173 (May) 1934 and DENTAL DIGEST 40:202-208 (June) 1934.

<sup>4</sup>Blass, J. L.: Prevention and Treatment of Periodontal Disease, Dental Items of Interest 60:622-634 (July) 1938.

our current knowledge of occlusion.

*Cardinal Signs of Traumatic Occlusion*—The following symptoms are revealed by the roentgenograph:

1. Widening of the periodontal space
  2. Thickening of the lamina dura
  3. Root absorption
  4. Radiolucent areas that may be mistaken for granulomas
- Oral Symptoms*—Following are the signs of traumatic occlusion that can be detected by oral examination:
1. Congestion of gingivae
  2. Recession or hypertrophy of the normal gingival line
  3. Increase of depth of gingival pocket
  4. McCall's festoons and Stillman's clefts
  5. Pus formation of any kind
  6. Mobility of the teeth

### Rules for Grinding Traumatic Occlusion

*The Basic Rule*—It is better to grind too little than too much (Fig. 1).

*Rule One*—When anterior teeth strike excessively in centric relation but normally in lateral and protrusive excursions, (1) the lower anteriors are shortened and (2) the incisal corners are rounded.

*Rule Two*—When anterior teeth strike normally in centric relation but have excess stress in protrusive and lateral excursions, the lingual surfaces of the upper anteriors are ground. Grinding of the lower teeth would take them out of centric contact and might encourage elongation or extrusions.

*Rule Three*—When lower posterior teeth strike too hard in centric and normally in lateral excursions, the





**RULE I**



**RULE II**



**RULE III**



**RULE IV**

**1. Rules for correcting traumatic occlusion. Rule I—**When anterior teeth strike excessively in centric relation but normally in lateral and protrusive excursions, (1) the lower anteriors are shortened and (2) the incisal corners are rounded. **Rule II—**When anterior teeth strike normally in centric relation but have excess stress in protrusive and lateral excursions, the lingual surfaces of the upper anteriors are ground. Grinding of the lower teeth would take

them out of centric contact and might encourage elongation or extrusions. **Rule III—**When lower posterior teeth strike too hard in centric and normally in lateral excursions, the sulci of the upper teeth are deepened. **Rule IV—**When posterior teeth strike normally in centric but interfere in lateral excursions, (1) the buccal cusps of the upper and (2) the lingual cusps of the lower are relieved.

sulci of the upper teeth are deepened.

**Rule Four—**When posterior teeth strike normally in centric but interfere in lateral excursions, (1) the buccal cusps of the upper and (2) the lingual cusps of the lower are relieved.

**General Rules—**1. Perfect relation in all the different occlusions is almost impossible. The best compromise in all directions to be obtained is the most to be expected.

2. Food impaction, as defined by Isador Hirschfeld,<sup>5</sup> caused by plunger cusps, must be eliminated.

<sup>5</sup>Hirschfeld, Isador: Food Impaction, J.A.D.A. 17:1504-1528 (August) 1930.

3. The large facet should be made smaller when stress is noted.

4. Above all, care must be taken not to grind to excess; more can always be taken off.

### **Prevention by Removing the Causative Factors**

Prevention of periodontal disease by the removal of the causative factors is the greatest service that can be rendered to the patient. The following factors may be included in a program of prevention:

1. Where crowding or buckling of the teeth is present the extraction of

a tooth (1) to prevent congestion and (2) allow proper cleansing is a simple operation that will sometimes perform this important service.

2. Much research and experimental work has been done by Rowe Smith<sup>6</sup> in cases where crowding of the teeth make a form of relief necessary. It has been shown that age is not as much of a factor in the condition described as was formerly thought.

3. Grassline, surgical silk, stainless steel, and even rubber band liga-

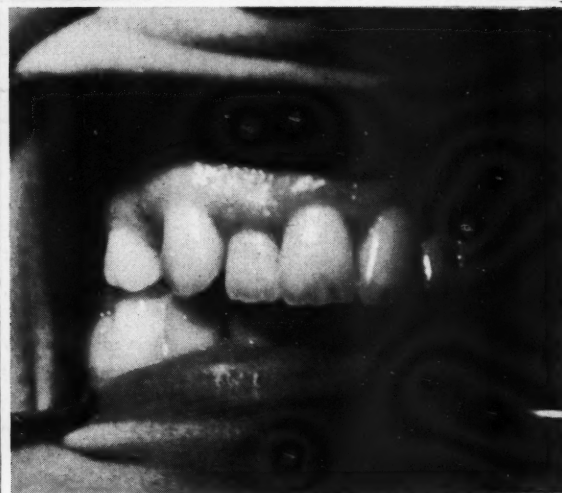
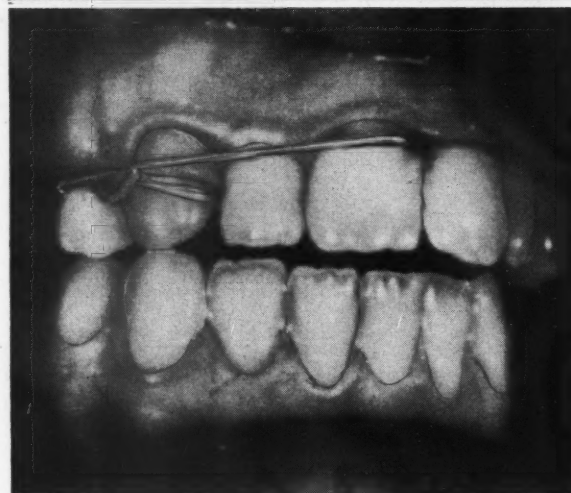
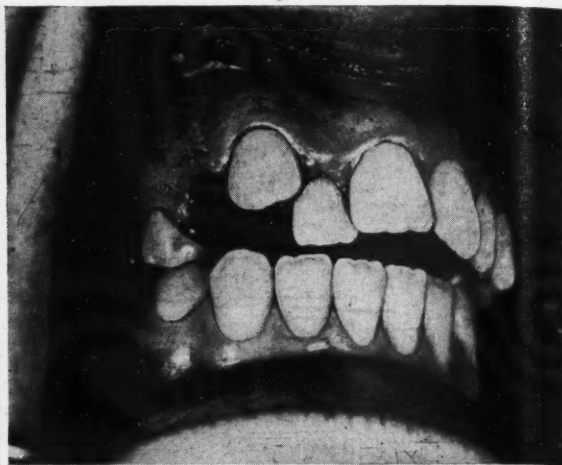
<sup>6</sup>Smith, Rowe: Periodontal Condition Associated with Buckling of the Lower Anterior Teeth. Etiology Diagnosis, J.A.D.A. 34:303-309 (March) 1947.



**2. Showing the congestion at gingival margins. The patient has no opportunity to keep the areas stimulated or clean.**



**3. Note the healthy firm condition of the gingiva compared to the engorged appearance in Figure 2.**



tures are often used to aid nature in completing a perfect alinement after extraction.

4. When the teeth are in proper position the gingival tissue can be maintained in a clean, healthy state.

5. Proper tooth brushing must be taught and the patient must be conscientious in correct use of the toothbrush (Figs. 2, 3, 4, 5, 6, and 7).

### **Improved Technique for Treatment of Necrotizing Ulcerative Gingivitis**

Many different drugs are now being used for the purpose of treating necrotizing ulcerative gingivitis or Vincent's infection, including penicillin which was used in the army with excellent results. It is highly important to avoid the use of caustics, such as chromic acid, as caustic drugs destroy tissue.

**4, 5, 6, and 7.** Showing the removal of an upper bicuspid in a patient of 27 to allow proper brushing and stimulation. Note the more favorable appearance, the fine alinement, and the healthy gingival condition, contrasting especially the upper lateral in Figure 7 to Figure 4.

**Helpful Measures**—1. The complete cessation of smoking and the total elimination of alcohol are curative aids.

2. A thorough prophylaxis and complete removal of (1) initial zones of attack, (2) third molar flaps, (3) or overhanging margins must be carried out to insure that there will be no recurrence of the disease.

**Home Treatment**—At home the patient is instructed to rinse with hot (110°F.) water containing sodium bicarbonate (four tablespoonsful to

a quart of water) every two hours followed by two teaspoonsful of hydrogen peroxide in half a glass of water each time.

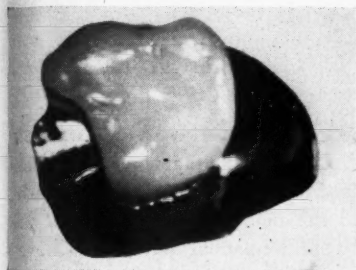
**Office Treatment**—The teeth must be carefully scaled and 1 per cent aqueous gentian violet must be used.

(The persistent use of hot water as an aid to nature as advocated by Samuel Charles Miller<sup>7</sup> is the most helpful adjunct that the author has added to the treatment of necrotizing ulcerative gingivitis. The fundamental theory of this adjunct is that the increased salivation is probably nature's attempt to eliminate the unhealthy condition).

**Replacement of the Second Lower Molar Unilaterally**—If the third lower molar has been removed previously, the loss of the second lower molar

<sup>7</sup>Miller, S. C.: *Textbook of Periodontia*, Philadelphia, The Blakiston Co., 1943.

presents a problem. Some type of replacement must be made to prevent the upper from extruding and causing a periodontal pocket to form between the distal of the upper first molar and the mesial of the upper second molar.



8. Chayes removable bridge replacing a second molar unilaterally.

The use of a one-tooth Chayes precision removable bridge using (1) an MOD inlay, (2) a three-quarter crown, (3) a full crown, or (4) a full crown with a Black cavity preparation on the distal attachment has proved satisfactory. The female attachment should be well in the step to prevent leverage and a distal tipping. The replacement will then be serviceable for many years (Figs. 7 and 8).

### Conservative Treatment

Treatment by the general practitioner should be conservative at first. A thorough scaling and adjusting of occlusion must be the initial steps. Then, after a few weeks, a decision may be made as to the type of surgical treatments, if any, that will be required. Frequently less radical treatment may be advisable than was at first thought necessary.

### Subjective Treatment

Periodontia is the only branch of dentistry in which treatment is partly subjective. In order for a patient to receive successful operative, crown and bridge, or prosthetic dentistry the only thing necessary is to find a competent dentist.

With periodontal treatment the patient must take an active part in the treatment, for complete home care is essential. This fact creates a problem for the dentist in general practice. The patient who has always depended upon the doctor is inclined to wait for treatment; in periodontia this is not sufficient.

**Patient Cooperation Essential**—Lack of cooperation by the patient may be one of the reasons why the general practitioner does not always get the expected results in periodontal cases. Without patient cooperation little or nothing can be accomplished.

**Changes in Psychologic Attitude**—The patient who is referred by his dentist to the periodontal specialist believes that because he was referred, his gingival condition must be serious. Because he is alarmed, the patient obeys the directions of the specialist and gives his full cooperation.

### Selection of Patients

The general practitioner should accept only those of his periodontal patients who want the service to the degree that they are willing to take an active part in the treatments and are eager to cooperate with the dentist.

### Limitation of Practice

In general practice only well-trained

dentists will attempt a horizontal impaction in surgery, trifurcated root canal therapy, or precision attachments in bridge construction, but a great number of dentists in general practice attempt all types of periodontia.

In justice to himself and to his patient, the dentist must realize his own limitations and refer those cases which he is not thoroughly qualified to treat to the specialist who limits his practice to periodontia.

### Summary

1. The patient must appreciate the importance of dental health and cooperate consistently to insure the success of treatment.
2. The dentist must possess a basic knowledge of causative factors.
3. Early diagnosis and a correct choice of treatment are important.
4. The ability and digital dexterity of the operator are important factors in successful treatment.
5. Postoperative care is a primary factor in the successful treatment of periodontal disease.
6. The management of the average periodontal problem can be a satisfactory and gratifying part of general practice.

Suite 602 Medical Arts Building.



9. The bridge in place.



# REMOVAL of a Mandibular Third Molar Tooth

## Impacted in a Mesioangular Position

STEWART EVERSON, B.A., D.D.S., Los Angeles

### DIGEST

*The removal of the impacted mandibular third molar tooth is one of the most frequently performed surgical operations of the average oral surgeon. Although the operation is a common one, because of the many varying factors involved in the procedure, this operation demands (1) ingenuity, (2) good judgment, and (3) skill on the part of the surgeon.*

*As there is no one technique that can be expected to be applied successfully in all situations the technique described in this article may be used under favorable conditions for the removal of the third molar tooth impacted in a mesioangular position. The fundamentals of the procedure analyzed herein may be used for the removal of third molars which are impacted in horizontal, distoangular, or vertical positions.*

### Choice of Procedure

The procedure to be employed in the removal of a third molar impaction is dependent upon the following factors:

1. The size of the tooth.
2. The shape and position of the tooth.
3. The proximity of the tooth to the second molar.
4. The density of the surrounding bone.

### Radiographic Examination

Suitable preoperative roentgenograms enable the surgeon to visualize not only the impacted tooth but the following:

1. The presence of possible anomalous structures.
2. Retained roots.
3. Pathologic conditions in the operative field.

After studying the roentgenograms, the operator should know (1) exactly what must be done, and (2) the method most suited to the operation.

### Roentgenographic Results

1. If the roentgenogram discloses that the tooth is in close relationship to the mandibular canal, it is wise to tell the patient that he may have a postoperative paresthesia due to possible injury to the alveolar nerve.

2. If the patient is told at the same time that he is forewarned that the paresthesia will only be a temporary condition, two things will be prevented: (1) undue worry on the part of the patient, and (2) hard feelings toward the dentist.

3. If the mandible is very thin and atrophic and the impaction is extremely deep, a pathologic fracture should be considered and this possibility should be discussed with the patient.

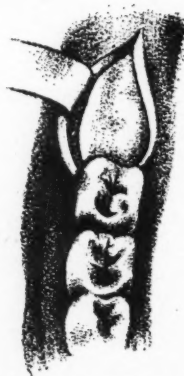
4. The patient is entitled to know the risks involved in his particular case, and in general the author has found that most patients are grateful for detailed information.

### Surgical Technique

1. Either a local or a general anesthetic may be given depending on the preference of the oral surgeon



1. The incision is made along the crest of the mandibular ridge.



2. Exposure of the bone which overlies the impacted third molar tooth.



3. Exposure of the crown after bone has been removed from the distal and buccal sides of the tooth.

and the patient. Unless its use is contraindicated the author gives pentothal sodium intravenous anesthesia supplemented with nitrous oxide-oxygen.

2. After the mouth prop is in place and the oropharynx has been properly packed, the mucous membrane in the field of operation is swabbed well with merthiolate.

3. An incision is started at a point just distal to the second molar tooth and extended along the crest of the mandibular ridge for a distance of about two centimeters up the ramus. The incision is made completely through the soft tissue to the bone which overlies the impaction (Fig. 1).

4. After the gingiva has been loosened from the buccal side of the second molar tooth the soft tissue is reflected with a periosteotome. When the soft tissues are properly retracted there will be adequate exposure of the bone to be removed (Fig. 2).

5. The bone overlying the crown of the impacted third molar tooth may be removed with an impactor, a surgical bur, or a chisel and mallet. After the crown has been revealed, additional bone may be removed from the buccal and distal sides of the tooth; the lingual bone is not disturbed (Fig. 3). It should be the surgeon's aim to remove the tooth through the smallest possible opening without unduly traumatizing the tissues.

6. In some cases there will be adequate space for the removal of the tooth if the anterior portion of the crown is removed (Fig. 4).

7. In other cases it will be necessary to bisect the tooth (Fig. 5).

8. After the tooth has been split into two sections the posterior portion may be rotated out of position with a Crane pick or a suitable elevator (Fig. 6). When this has been accomplished, the remaining root may be removed easily.

9. If the bony septum between the roots of the tooth has been fractured it should be removed. The bone edges are then trimmed with either rongeur forceps or a chisel and then smoothed with a bone file. The area should be



4. Lateral view of the impaction after splitting off the anterior portion of the crown.



5. The tooth has been bisected in a longitudinal plane.



6. The posterior portion of the tooth is rotated out of position with a Crane or suitable elevator.

thoroughly curetted with particular attention to the spaces between the bone and the soft tissues where bone spicules may have become lodged.

10. One black silk 000 suture may be taken in the center of the incision although this is rarely necessary because the incised edges usually lie in close approximation. Experience has shown the healing time with or without sutures to be approximately the same.

### Postoperative Treatment

1. The patient is advised to return

for treatment on the third or fourth postoperative day.

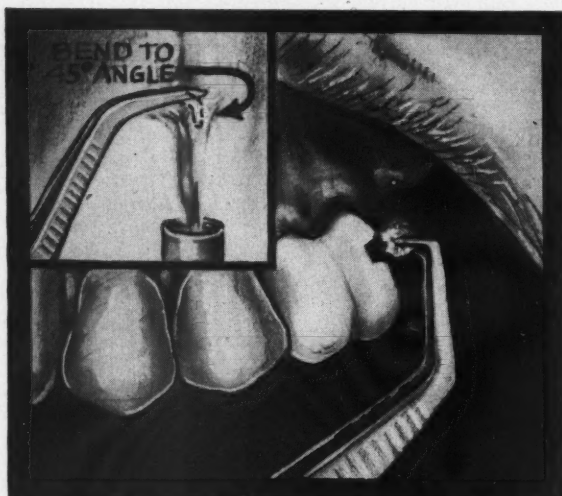
2. At this time the suture is removed and the area of operation is thoroughly irrigated with warm saline solution.

3. A surgical paste may be inserted into the socket at this time to prevent food from becoming lodged in it.

4. The patient should return for similar treatments as often and for as long as the surgeon considers it necessary.

2007 Wilshire Boulevard.

1



## Clinical and Laboratory

### Operative Pliers for Distal Surfaces

M. Mage, D.D.S., New York

1. Suitable pliers for use in areas of difficult access may be made by heating the beaks of regular cotton pliers and bending them to a 45 degree angle.

2

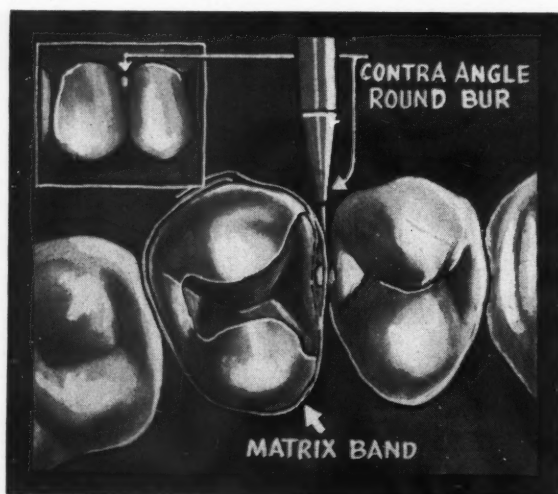


### Removing Salivary Calculus From Dentures

Joe H. Smith, D.D.S., Dallas

2. Calculus may be safely removed from an acrylic denture by soaking the denture for fifteen minutes or less in a 50 per cent solution of hydrochloric acid. Do not use if there is metal in the denture.

3



### A Simple Wedge for Concave Gingival Margins

Paul E. Powell, D.D.S., Oceanside, California

3. It is difficult to secure a perfect gingival margin on an amalgam restoration when the amalgam extends on to a concave surface. A contra-angle round bur will act as a suitable wedge for the matrix band.

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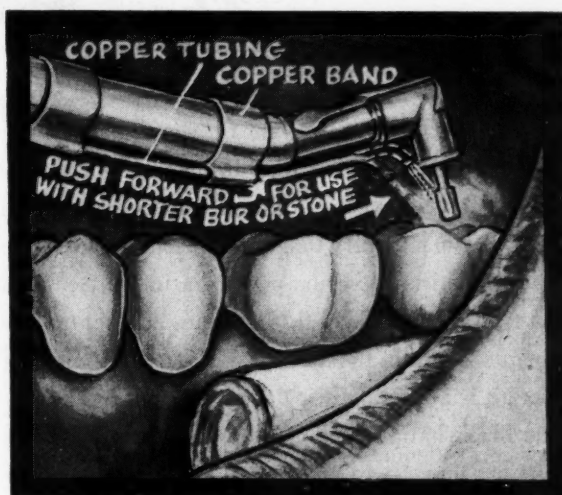


## SUGGESTIONS . . .

### An Adjustable Water-Air Spray

Chester A. Thorsen, D.D.S., Evanston, Illinois

4. An aid to the water-air spray equipment may be made from copper capillary tubing (.070 O.D.) obtained from a refrigeration service shop. The tubing is bent to conform to the undersurface of the contra-angle and attached with copper bands pinched together. No soldering is required. A ball of solder, however, on the tubing keeps the rubber tube in place. The copper tubing can be moved forward and backward to direct the spray at the cutting edge of the instrument. It is adjustable for instruments of different length and size.

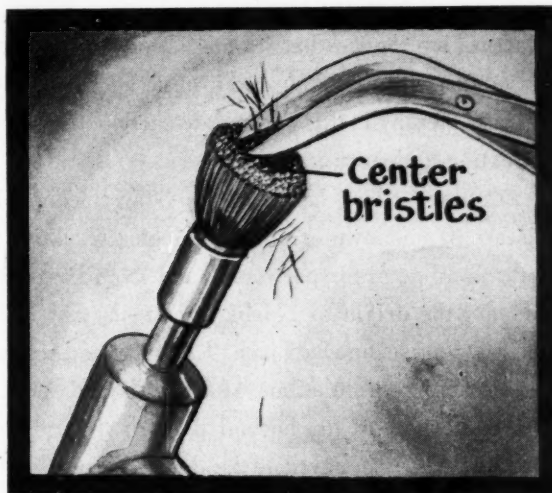


4

### Trimming Prophylactic Brushes

Victor R. Sleeter, D.D.S., Lake Bluff, Illinois

5. New Prophylactic brushes will "hug" the tooth better if the middle bristles are cut short. Use crown and bridge scissors.

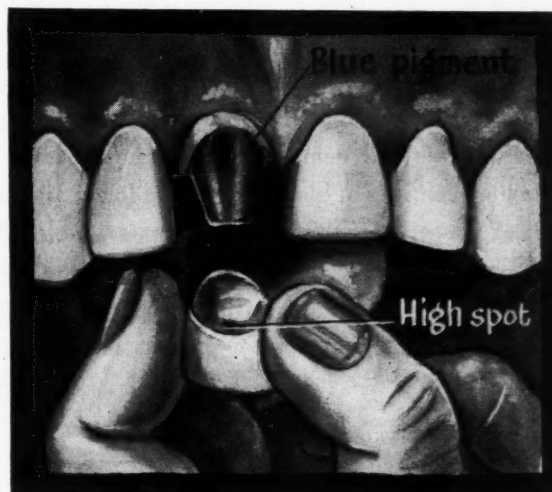


5

### Fitting of Jacket Crowns, Inlays, or Gold Crowns

William T. Sayre-Smith, D.D.S., San Diego, California

6. Paint the tooth with a thin coat of Prussian blue pigment using cotton on a toothpick. The pigment should be used directly from the tube. Place the restoration on the tooth. The high spot will be revealed on the restoration by a blue transfer from the tooth. After proper adjustments are made the Prussian blue is removed from the tooth by wiping with cocoa butter.



6

suitable illustrations; write a brief description of the technique involves; and jot down the advantages of the technique. This shouldn't take ten minutes of your time.

Turn to page 468 for a convenient form to use.

Send your ideas to: Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

## The EDITOR'S Page

IT HAS BEEN noted that discoloration of the tongue occurs in 20 to 30 per cent of a group using oral preparations of penicillin. In fact, even in those patients receiving penicillin by intramuscular injection a black hairy tongue has been observed. Because dentists prescribe penicillin in the treatment of conditions of the oral soft tissues and because the tongue is within the area of their frequent observation, it is important that dentists should be aware of the black hairy reaction. The reaction is not serious but may be an issue of concern to the patient. When the antibiotic has been withdrawn the tongue will return to the normal state in about one month.

Wolfson<sup>1</sup> has recently reported four cases of black hairy tongue that he has observed. His observations on the etiology, mode of action of penicillin, and therapy in this particular reaction are worth repeating to dentists:

**Etiology**—Black hairy tongue is an uncommon disease of unknown origin. Histologically, the filiform papillae are hypertrophic and hyperkeratotic and are the origin of hairlike filaments that may grow as long as one-half inch. The papillae become covered by accumulations of bacteria and molds which are part of the normal flora of the mouth. The pigment is believed to be derived from food, liquor, tobacco, drugs, such as iron and mercury, and mouthwashes that contain certain oxidizing chemicals. According to Lederer<sup>2</sup> the condition is frequently associated with an unhygienic mouth. Primarily, however, the pigment originates in a local chemical reaction between the decomposition products of food debris and the iron present in minute quantities of blood that can be found almost all of the time near the free margins of the gums and between the teeth. Cross<sup>3</sup> estimates that discoloration of the tongue constitutes at least 30 per cent of all oral reactions of patients taking oral

penicillin. The discoloration appears as early as two days and as late as nine days and on an average of four days following the use of penicillin. It is a pigmentation of the filiform papillae and involves principally the back of the tongue, the central furrow, and portions of the pads, leaving the sides and tip unaffected. The color varies from yellowish brown to black.

**Mode of Action of Penicillin**—The manner in which the penicillin acts is uncertain. Bedford's<sup>4</sup> impression was that the discoloration was due to either a fungus or a chromogenic bacterial growth which followed the inhibitory action of penicillin on the usual flora of the mouth, which in turn act as inhibitors of other organisms. However, Cross failed to recover fungi or chromogenic bacteria.

Ellinger and Shattock<sup>5</sup> studied the urinary nicotinamide output and found it greatly diminished under oral penicillin therapy. They thought that penicillin inhibited the growth of intestinal organisms involved in the synthesis of nicotinamide and that the oral reaction was related to a deficiency of this vitamin. However, they also considered local contact to be an important factor. In order to test the theory of nicotinamide deficiency Cross treated a number of patients with oral penicillin plus nicotinamide and observed that discoloration of the tongue developed in 20 per cent of the group.

Irritation from the lozenge base was investigated, but the use of lozenges consisting only of base did not produce a reaction. Certainly no such possibility existed in two patients observed who were treated with aerosol penicillin.

**Therapy**—There is no specific therapy for removal of discoloration of the tongue. Once the discoloration has developed it can be reversed by interrupting the penicillin therapy. Adjunctive treatment with mouthwashes and rinses is of doubtful value. Any compound containing strong oxidizing or reducing agents should be avoided.

<sup>1</sup>Wolfson, Samuel A.: Black Hairy Tongue Associated with Penicillin Therapy, J.A.M.A. 140:1206-1207 (August 13) 1949.

<sup>2</sup>Lederer, F. L.: Diseases of the Ear, Nose and Throat, Philadelphia, F. A. Davis Company, 1946, p. 809.

<sup>3</sup>Cross, W. G.: Oral Reactions to Penicillin, British Medical Journal 1:171-173 (January 29) 1949.

<sup>4</sup>Bedford, P. D.: Black Tongue and Oral Penicillin, British Medical Journal, 2:63 (July 13) 1946.

<sup>5</sup>Ellinger, P., and Shattock, F.: Nicotinamide Deficiency After Oral Administration of Penicillin, British Medical Journal 2:611-612 (October 26) 1946.



## Cirrhosis of the Liver

Cirrhosis of the liver is a chronic, diffuse, progressive fibrosis of the liver, preceded or accompanied by more or less fatty infiltration. In general, the prognosis is poor although recent advances in therapy have definitely improved the prognosis.

1. The chief cause of cirrhosis of the liver is dietary inadequacy. 2. Most authorities believe that chronic alcoholism is the principal cause of this inadequate diet. 3. Lack of protein foods is the primary reason for liver damage. 4. Why it develops in only a small percentage of the undernourished and chronic alcoholics is unknown.

Pathologically, cirrhosis of the liver is the advanced stage of a chronic, widespread damage to the liver cells. This is evidenced by (1) more or less fatty infiltration within the liver cells and (2) a varying amount of periportal fibrosis. These conditions result in a varying degree of liver failure and portal hypertension.

Clinically, the liver failure and portal hypertension are responsible for the ascites, hematemesis, enlarged liver, and other signs and symptoms characteristic of this disease. Sixty per cent of these cases occur between 40 and 60 years of age. Eighty per cent of them occur after 35 years of age. In countries where there is considerable malnutrition even children develop cirrhosis. Over seventy per cent of cirrhotics are men, probably because men drink more alcohol, but women are fast catching up with the men.

A number of tests in use today are of great value in making a diagnosis of cirrhosis of the liver. At times a liver biopsy may be necessary in order to make a diagnosis. As a result, a definite technique has been developed to obtain a liver biopsy by the use of a large needle.

The most important difference between the older methods of therapy and the new therapy is dietary. The real change in the diet is from a low

# MEDICINE

## and the Biologic Sciences



protein to a relatively high protein diet. There is abundant clinical and good experimental evidence that a rather high protein diet is most helpful. Milk, eggs, meat, cottage cheese and other foods high in protein should be appetizingly provided. Water can be interdicted until the food intake is adequate.

Alcohol should be interdicted, although the evidence is not good that alcohol itself is the direct cause of cirrhosis of the liver. It may be a noxious agent but the fact has not been proved. If the alcohol intake is kept up the chances are poor that the patient will eat properly.

The common accompaniment of neuritis in this disease suggests that a routine use of multiple vitamins is in order. Antibiotics are responsible for some of our improved statistics. Penicillin often controls infections and perhaps prolongs the lives of these patients considerably.

Rest should be judiciously employed. These patients are willing to rest at first and generally they can be permitted to follow their own dictates.

The control of this disease is essentially (1) the prevention of

chronic alcoholism and malnutrition and (2) the over-correction of the dietary deficiencies once the disease is discovered.

*Corr. W. Phillip: Diagnosis and Treatment of Cirrhosis of the Liver, Postgrad. Med. 5:474-480 (June) 1949.*



## Perennial Allergic Rhinitis

The commonest of the allergic disorders of the respiratory tract is perennial allergic rhinitis. Unfortunately this is also the most neglected and worst treated.

In probably one half of the cases of asthma, perennial allergic rhinitis may be considered as the forerunner. The late complications of a long neglected allergic rhinitis have been termed by some as "intrinsic asthma." This neglect is largely the fault of the patients or their parents. It arises from the fact that symptoms are mild and persist unchanged over long periods.

The commonest cases are those in which casual and short exposure to an allergen causes a brief bout of nasal itching and sneezing. It is normal to have two or three sneezes consecutively sometimes, but a person without a cold who sneezes six times or more consecutively is considered as allergic as a patient with typical asthma.

Allergic nasal edema, perennial in occurrence, will coincide sooner or later, particularly in the colder seasons, with an intercurrent (virus) coryza and with the presence of pathogenic bacteria in the nose. The more frequent and protracted the allergic rhinitis, the greater is the likelihood of a complicating acute or chronic infectious sinusitis.

Inhaled allergens, such as (1) house dust, (2) bedding materials, (3) wool and domestic danders, (4) cosmetics, (5) Pyrethrum and various organic dusts incident to occupations are the commonest specific causes. Their frequency decreases in about the order named above. Ingested substances, notably cereals, nuts, chocolate, sea foods, raw foods,



and eggs are occasional factors. Drugs are rare causes.

Physical examination, in addition to usual routine, should include special studies of the nose and sinuses clinically and by x-ray. Findings of mucous polyps in the nose is in itself of basis diagnostic value; positive proof of the allergic etiology of the patients' trouble. Skin tests for sensitivity are an essential part of the diagnostic procedure.

Complete avoidance of offending allergens gives the best therapeutic results. When this is impossible or impracticable, some avoidance and desensitization is necessary. Desensitization is necessary when part avoidance fails to give complete relief. This is done (1) by subcutaneous injections of increasing amounts of the specific allergen, and (2) in the case of foods, by feeding increasing amounts.

In the absence of sinus infection or of advanced polypoid change results of treatment are usually lasting. Part or complete failures are encountered as a rule only in complicated cases. Even in such cases the record is better than in chronic asthma.

Over 75 per cent of patients are completely relieved. Most of the rest are partly relieved and less than 10 per cent are not helped. These failures constitute less than 4 per cent of all cases.

Kern, Richard A.: *Perennial Allergic Rhinitis: The Most Important Respiratory Allergy*, *M. Clin. North America* **31**:1375-1392 (November) 1947.



### Mole— Its Importance

So-called melanoma or melanotic sarcoma, an extremely vicious tumor, develops when the chromatophores undergo cancerous transformation. The skin contains dendritic pigment-bearing cells known as chromatophores which are located in the lowermost layer.

The chromatophores are present in greatest abundance in the dark races.

In the caucasian such cells are rarely evident except in the localities protected from light, as in the areola of the nipple and the margins of the anus. The same variety of pigment cell occurs normally in (1) the retina and choroid coat of the eye, (2) in the interstices of the ciliary muscle, and (3) in the matrix of hairs.

The position of the chromatophores among cells is still undetermined. Likewise, the place of the melanoma among tumors is debatable. Some regard the chromatophore as epithelial, some endothelial, others as neurogenic, and still others as a connective tissue cell. Consequently, the tumor which it causes has a variety of classifications. A peculiarity of the melanoma is that it may metastasize to other tumors.

Everyone has one or more moles; and every mole is a potential source of a melanoma. The mole is a development characterized, even in the resting stage, by an arrangement of chromatophores that bears a resemblance to that of a tumor. In fact, the number, formation, and chromatic richness of the cells in many instances are such that a given microscopic field might be mistaken for a tumor with established cancerous qualities rather than an apparently trivial congenital malformation in the skin.

The mole undisturbed may never cause trouble. The great majority never undergo any extensive change. However, if a mole is located where it is exposed to frequent irritation, or as too often happens, a mole is subjected to ligation or to the action of escherothotics applied either by the host or others, a growth of highly dangerous qualities may develop. The cancerous change may occur soon after such interference or it may be postponed for months or even for many years.

In general, the skin mole should be left to its own devices. If removal is considered advisable, the sacrifice of a considerable sweep of apparently healthy skin and subcutaneous tissue should be made.

Editorial: *Cancerous Melanoma*, *J.A.M.A.* **139**:1151 (April 23) 1949.



### Hiccups

Continued hiccups can be annoying and sometimes serious. There have been many suggestions and types of treatment.

A treatment reported recently has been quite successful in a series of cases after the usual methods of treatment had been tried without success.

Quinidine stopped paroxysms in the majority of cases. The dose of the drug and the frequency of administration necessary to stop a paroxysm is still undetermined. It is suggested that an initial dose of 10 grains, preferably given by the intramuscular route, be repeated hourly for three to four doses.

If the paroxysm stops, the patient may be put on a maintenance dose of 5 grains orally every two to three hours. If the paroxysms recur, the initial high dose should be repeated.

It is believed that the quinidine stops the paroxysms in two ways: (1) by a direct effect of the drug on the diaphragm as well as the muscles of respiration, and (2) by blocking the nerve impulses at the myoneural junction.

Bellet, S., and Nadler, C.S.: *Use of Quinidine Sulfate in Treatment of Hiccup*, *Am. J. M. Sc.* **216**:680-683 (December) 1948.



### Stomach Ulcers

The term, peptic ulcer, is used to designate both ulcer of the stomach as well as ulcer of the duodenum. There are a number of reasons for this:

1. Ulcer of the stomach and ulcer of the duodenum resemble each other so closely in the type of distress they produce that they are often distinguishable only by x-ray examination.
2. Both the stomach and the duodenum are bathed by pepsin, an enzyme that helps digest food.
3. About 90 per cent of all peptic ulcers are located in the duodenum while 10 per cent occur in the stomach.

Peptic ulcer is without doubt a major health problem. There are approximately one and one-half million people in this country above the age of 30 in whom peptic ulcer is likely to develop during a ten-year period.

The disease afflicts (1) those who live a high tension life, the hard driving, alert, intelligent, go-getter type and (2) the chronic worriers of society, the maladjusted and the frustrated. It has been termed, "the wound stripe of civilization."

The cause of ulcer is still a debatable matter, although there are numerous theories, each with its strong supporters. Until the cause is definitely established it follows that treatment remains a matter of the physician's opinion and judgment.

The psychosomatic origin is popular with some authorities. High strung persons are particularly susceptible to ulcers. Their ulcers tend to heal and become quiescent when these persons are put on mental and physical rest. The ulcer symptoms tend to recur when they resume their tasks and responsibilities.

Important in the causation of ulcers are (1) psychic maladjustments, (2) financial uncertainties, (3) domestic upheavals, (4) mental thwartings, (5) social frustrations, (6) fear, worry, or anxiety, and (7) excessive stress in the pursuit of one's vocation.

Another popular theory is the influence of hyperacidity on ulcer formation. There is an efficient mechanism of defense against ulcer formation. This mechanism consists of at least four factors, namely; (1) ingested food absorbs much of the acid and protects the lining of the stomach against corrosive action, (2) the stomach normally secretes mucus which coats the lining of the stomach and likewise protects it from corrosive action, (3) the intestinal juices that normally pour into the duodenum are alkaline and so neutralize much of the gastric acidity, and (4) a substance has been shown to exist within the duodenum that acts through the blood stream to exert a protective influence on the stomach by depressing and restraining the gas-

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tric acid. This substance has been called enterogastrone by Doctor Ivy of the University of Illinois.

Other theories which have had their day are (1) bacteria, (2) bacterial toxins, (3) toxins of cutaneous origin, (4) toxins of metabolic origin, (5) disturbances in the circulation of the stomach, (6) ingested poisons, (7) toxic substances, and (8) vitamin deficiencies.

Vagotomy, cutting of the vagus nerve, has much in its favor and has brought excellent results to a large number of persons but it is not a specific cure in any sense of the word. Chronic diarrhea sometimes follows it as well as other complications.

Numerous forms of treatment have merit but there is no such thing as a specific form of treatment or cure. Many feel that the disease can only be controlled or arrested rather than cured. Since the disease has the perverse habit of recurring after both medical management and surgical treatment it is well to take a conservative attitude toward it.

Kirsner, Joseph; Palmer, Walter Lincoln; Ricketts, William E.; Dashiell, Grayson F.; and Buser, Julian W.: *Gastroenterology, Arch. Int. Med.* **81**:569-599 (April) 1948.



### Acute Arterial Injuries

Acute injuries of the major arteries are quite common today. They present a problem, both from the standpoint of immediate mortality and in regard to the ultimate functional results. The objectives of treatment are (1) the arrest of hemorrhage and (2) the preservation of an adequate arterial supply to the extremity.

The majority of arterial injuries are produced by lacerations or penetrating wounds. An injury to a major artery is not necessarily indicated by an open wound. Arterial injuries are considered under four categories: (1) complete division, (2) partial division, (3) contusions, with or without thrombosis, and (4) compression.

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Complete division of a major artery, even associated with a large wound does not necessarily lead to exsanguinating hemorrhage. Retractions of the ends of the injured vessel with the attendant arterial spasm may permit formation of a thrombus which effectively seals the lumen. Low blood pressure from shock favors the development of such thrombosis.

If the vessel is not completely divided, retraction of the two ends is impossible and the likelihood of

spontaneous arrest of hemorrhage through thrombosis is diminished. Even though the bleeding is temporarily arrested, secondary hemorrhage is likely to occur.

It is well known that injuries of arteries in certain locations may have little effect on the survival of the extremity, while obstruction of the vessels above or below this level may be crippling. There are certain anatomic bottlenecks where loss of arterial continuity is especially serious. In gen-



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eral, these bottlenecks are close to the joints of the extremities, since it is at these points that the collateral vessels are most vulnerable.

The diagnosis of acute arterial injury should be made at the earliest possible moment so that proper treatment can be instituted. Delay may lead to progressive thrombosis of the artery distal to the point of obstruction, with occlusion of collateral vessels. In addition, anoxia from ischemia may produce irreversible altera-

tions in the tissues, especially nerve and muscle tissue.

Of great significance in the early diagnosis of acute arterial injury is the appearance of the extremity. Extreme pallor or blanching is an early sign. Palpation of the peripheral pulse should be a part of the routine examination of every injured extremity. Loss of sensation in the distal parts of the extremity, especially when associated with severe pain, is of value as an early sign.

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Arrest of hemorrhage is the first requirement in the treatment of an acute arterial injury. Unfortunately, the tourniquet comes to mind first as the means of arresting hemorrhage from an extremity. The tourniquet, unless used only as a temporary measure, invariably seals the fate of an extremity, since it cuts off all the collaterals.

Direct pressure on the bleeding point is desirable, especially with elevation of the extremity. The wound may be packed with gauze held on by a snug bandage. This gauze will have to be removed within two to four days and the hemorrhage may recur. Hemostatic absorbable material may be advisable in some instances.

Restoration of both the volume and the hemoglobin content of the blood is essential especially when the main arterial channel is permanently interrupted.

Freeman, Norman E.: *Acute Arterial Injuries*, J.A.M.A. **139**:1125-1129 (April 23) 1949.

## CLINICAL AND LABORATORY SUGGESTIONS

(See pages 460 and 461)

Form to be Used by Contributors

To: Clinical and Laboratory Suggestions Editor

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Evanston, Illinois

From: \_\_\_\_\_

Subject: \_\_\_\_\_

Explanation of Procedure:

Sketch:

\$10 will be paid to author on publication of accepted suggestions.

## Contra- Angles



### Frozen Milk

THERE HAS BEEN much talk in Washington about home freezers. One of the aides on the White House staff says that he got hold of a few samples and sent them around the country to his friends. The wife of the President and the Chief Justice were on his gratuity list. The rumpus raised over "home freezers" has focused the attention of the country on this subject. It may be good publicity for the manufacturers, if not for General Vaughan.

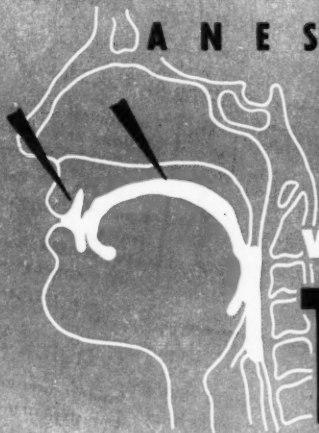
The use of electricity to refrigerate food is relatively new. Twenty-five years ago artificial ice was lugged into the house. Before that, ice was cut in the winter in rivers and lakes and stored in sawdust in ice houses from there to be uncovered in summer and distributed by the iceman in his noisome blue flannel shirt. The kid who never jumped on the step of an ice wagon to steal a sliver of ice missed a thrill and treat.

Regular refrigeration reduces temperatures and by so doing bacterial life is inactivated and food spoilage is reduced. The lower the temperature below freezing, the less the bacterial activity. The principle is applied to the deep freeze unit where food-stuffs are reduced below the freezing point and held there until ready for use. Many seasonal fluctuations in food availability are thus controlled. Strawberries for Christmas, ice-cream at any time, choice cuts of meat for unexpected guests are among the advantages.

One of the last items to be added in the frozen food line is frozen fruit juices. Oranges and grapes, for example, are picked when sun ripe and brimming with vitamins. The juices are extracted and frozen. These frozen fruit juices are available in

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nearly all grocery stores. Assays have shown that the ascorbic acid content is higher than that found in "fresh" orange juice.

The idea for frozen milk is being advanced with vigor by a dental colleague in Australia, George E. Payne Philpots. Doctor Philpots, who is a graduate of the University of Pennsylvania, and I have carried on a friendly correspondence for years. Recently he sent me a copy of an address that he gave before The Australian Institute of Refrigeration. What he says of frozen milk makes sense:

"There should be only one quality of milk for human consumption; that is milk from healthy animals frozen into pint and one-half pint blocks as near the source of production as possible and delivered to the consumer wrapped in cellophane and stored in ice chests or refrigerators in which a week's supply of frozen milk could be stored. This would in time do away with the early hour milk delivery. Frozen milk could be transported from Queensland and sold in Melbourne or Perth or even sent to London and be as good as the day it was frozen at the source of production. At present it seems a lot of money is spent in taking samples of milk from bulk in milk cans and bottles in small shops and testing for butter fat and the bacteria count. It is apparent that this method does not insure clean milk. The inspections should be on the farms to inspect the animals, milking sheds, milkers, etc. Not to harass the producer, but to help him in his efforts to get clean milk from his herds.

"The question of cheap milk should not enter the picture. The public is prepared to pay for a clean frozen milk supply. It is better to spend money on a clean milk supply as a means of prevention of disease than in the building of hospitals and sanatoriums for the treatment of disease. A reflection into present day conditions should convince even the casual thinker that the present regulations, army of inspectors to detect adulterations, etc., are in my opinion wrong. This unit of manpower could and

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#### 1) BURS must RUN TRUE

The control of "bur-wobbling" is at your command when you use the Premier Come-a-part.

When the #2 Bearing wears and burs begin to wobble, instead of sending the angle out for repair, you yourself can replace the bearing with a new one within a minute for 75c. In a new #2 bearing, Burs must run true.



Disk Guard Head    Spare Head    Miniature Head

#### 2) QUICK & EASY CLEANING

Instant disassembly for cleaning, oiling and sterilizing—(with consequent longer life)—is so simple and quick that you will do this often.

#### INTERCHANGEABLE HEADS

All three are interchangeable within seconds.

Disk Guard Head . . . \$5.75  
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should be converted to help the milk farmer by instructing him in the methods of clean handling of milk by clean milkers, clean machinery, utensils, water and water pipes to be tested for bacteria, last but not least, the milk pasteurized and cooled at source of production with the aid of mobile refrigeration plants. Such a scheme as this would go a long way towards the help of the masses for the reason that good health is not maintained by taking bottles of medicine, even

if supplied free by authorities. "The treatment of disease belongs to the Dark Ages. The prevention of disease is the Divine Whisper of the present. In New Zealand the Government's free dope scheme is only making the nation dope addicts, and is increasing disease conditions. In Australia the powers that be allow the quack medicine vendors to flood the press with their false claims to catch the unfortunates who, when born were healthy, but owing to wrong diet, con-

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Diamond Instruments — like cut diamonds — look alike, but there is a big difference. That is why Premier identifies every one of its diamond instruments with the RED DOT.

The RED DOT on a diamond instrument is your assurance of:

- RELIABILITY** ... PREMIER unconditionally guarantees every instrument against structural defects.
- DURABILITY** ... PREMIER'S binding processes insure unusually long life to the instruments.
- EFFICIENCY** ... PREMIER uses the maximum amount of diamonds per area for smoother and quicker cutting.

### "3P" — A RED DOT EXCLUSIVE

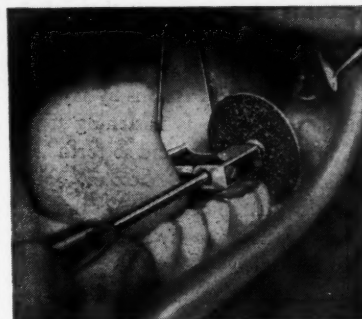
Shaped to provide concave, taper and flat grinding surfaces in a single diamond instrument. The Red Dot Diamond "3P" accomplishes a great many operations without necessitating the changes of instruments in the handpiece or contra angle.



3P-s

3P-m\*

3P-l



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The HAWCO DISC GUARD is designed to aid you in the preparation of difficult interproximal gingival margins. It provides 100% protection for the tongue. The long mandrels will allow you to reach at least 3/16-inch lower on INTERPROXIMAL GINGIVAL MARGINS in the lower molar region without hand-piece interference. Mandrels may be shortened, if desired.

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taminated milk, and over-refined foods fall easy victim to the patent medicine vendor who soon amasses fortunes."

### Rural Social Center

Over the river from my farm is a village garage that is the center of the social life of the countryside. There is the place to gather to spend a few comfortable hours in news gathering. During the overhauling on the combines, trucks, and tractors

there is a rich interspersation of talk. It is not the pompous talk of the conference table, the windjamming of the sales meeting, the vapid remarks of the noisy cocktail party. It is the down-to-earth talk of procreation (both legal and nonlegal), of crops and markets, of illness and death. This forum needs no chairman, no moderator—every man for himself. There is a generous amount of salty reference and more than a modest sprinkling of Anglo-Saxon with the

tobacco juice. Here you never hear the clichés of the moment that infest the city speech: nobody is "contacting" somebody; there are no "situations;" no speaker explains by saying, "I mean;" no one is hastening to a "conference;" "so on and so forth" is unheard. Dangling participles, split infinitives, juxtapositions in grammar are of no concern to my friends in the village garage.

I admire my country neighbors because they can plough a straight furrow or a contour better than they can describe the process, because they can do more with a screw driver, a hammer, and a piece of baling wire than a city mechanic can do with a whole armamentarium of expensive tools.

After the hay was in and before the corn picking, I met a farmer who had used the lull in the seasons to have some dentistry done. From his report he had six teeth extracted and a full upper denture made for \$25. He confided to me that the dentist made \$15 profit because "the material cost only \$10." I gathered that the six extractions were a sort of premium that the dentist gave to be allowed to make the denture.

The day that I heard the story I wasn't in a public relations mood for dentistry because I was at the moment slightly more concerned with circulatory distress in my automobile fuel pump. When the pump was replaced and the circulatory affair was corrected (more promptly and easily than I am able to improve similar conditions in the oral soft tissues) I returned home to my hammock. As I swung between the oak trees and listened to the far-off hum of the tractors, I thought of the dentist who did so much for so little.

I do not know this dentist. I have his name and on checking with the American Dental Association directory, I find that he is not listed. The farmer who had the bargain dentistry told me that the dentist was "along in years" and that he moved from one town to another frequently. He explained it that "the other dentists don't like his price cutting." I wouldn't blame them!

Any dentist who undertakes six extractions and a full upper denture for

\$25 loses money. If he does enough of this kind of business he may *handle* a lot of money but he is bankrupt in fact if not in law. Although he is supposed to have the professional knowledge, skill, and judgment of his contemporaries he can't have any of these qualities for the good reason that he cannot afford them. It takes time and money to gain knowledge; supervised experience to gain skill; deliberation, observation, and professional association to develop judgment. The cut-

priced dentist has no time to attend a meeting or read the professional literature. He is too busy *handling*, but not making, money to have any part in the affairs of dental organizations. No company will grant him malpractice liability insurance because he is a professional outcast, but he is just as liable for a law suit for his combination extraction and full denture job. In the eyes of the law, because he is not up to the standards of the community, he is more liable.

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Let him appear in a law suit and his position is far less secure than that of the dentist of solid professional standing. It is unlikely that he has a clean office or an efficient assistant.

Supposing this dentist uses the cheapest bootleg materials and supplies, he still can't extract six teeth and make a denture for \$25 even if he sits up nights doing his own laboratory work. But even if he could keep the material costs at the \$10 level, my farmer friend failed to mention

that he still has rent and other office expenses to pay out of his "\$15 profit." The poor fellow is broke and doesn't know it; bankrupt and doesn't feel it.

I have never heard any dentist make the serious suggestion that we should be unionized and invoke minimum or standard fees. We have depended upon *esprit de corps* and professional tradition to make our services available at a fee level suitable for all people. These values have



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carried us far and we should not lose them.

I don't know what to do about our poor colleague. Whatever it is should come by education and advice, not by some decree from a bureaucracy or a union. One thing that I know is that he is headed for a poor house because dentists do not have social security to strengthen them in their old age.—E.J.R.

## Architecture of the Human Mandible and Maxillae

**Alfred Gabriel, D.D.Sc., Sydney, Australia**

A vast amount of work has yet to be done before there is a proper comprehension of the architecture of the jaws. Many factors are concerned; hereditary transmission from our ancestors and environmental influences on function and so on growth are intermixed. Most of the surface features of the mandible and maxilla have been noted; the teeth have

In your **ORAL HYGIENE** this month

## Yes, Organized Dentistry

## Can Meet The Challenge

Who's to blame? Only about 25% of the American people receive adequate dental care. The other 75% receive only enough dental care to keep them relieved of pain. Doctor Robert C. Wright says:

"There are three reasons why people do not avail themselves of necessary treatment: (1) ignorance of the benefits of dental treatment; (2) fear of the pain which might be involved; (3) unwillingness or inability to pay for treatment. The main reason, of course, is the financial one . . . It is not the problem of government or organized dentistry to provide free or prepaid dental care, but it is the duty of these two groups to educate the people to appreciate our health service."

You will want to read the whole article, "Yes, Organized Dentistry Can Meet the Challenge."

★ ★ ★

Business falling off? Collections getting harder? . . . Doctor Leo B. Dillon says that many dentists are complaining but few are offering any constructive suggestions to remedy the situation. His article, "Keeping Business Good," is his personal contribution to helping dentists keep their practices thriving. It is judged "the best feature published this month," and has won the Oral Hygiene \$100 award.

★ ★ ★

Did you ever wish you could walk into the office of one of the men who speak and demonstrate so convincingly at dental meetings, just to see if he *never* had the troubles that seem to pop up so often in your own

practice? . . . Doctor Edward L. Wharton tells you what you might find out if you did. He's a bit hard on himself and other dentists who write or speak to the profession—but infinitely comforting to those who form the audience. You won't want to miss this good humored criticism of dental "savants."

★ ★ ★

Doctor Cary Middlecoff has been front-page news in every town that boasts a golf course. Henry F. Unger writes an interesting story of his life, "He Fills Cavities with an Iron." Few newspaper stories tell much about the National Open Champion's dental training or background. This interview (especially for Oral Hygiene) fills in the gaps to make interesting reading for dentists.

★ ★ ★

To hear dentists talk, or to read their articles, one would think that children are one of the most troublesome patient-problems a dentist can have. Doctor A. A. Moss, having solved this problem, presents a detailed description of his method, which, he says, works to the satisfaction of both child and dentist.

★ ★ ★

We never have room enough to discuss the contents of all of the various departments of the magazine, or even to list their titles, but, this month, we "steal" space to tell you about an item in "Dentists in the News" we don't want you to miss. A *Providence Bulletin* clipping tells of a British dentist who took in the equivalent of \$100,000 in eleven months—and lost money doing it!

been described macroscopically; and the paths of nerves and vessels traced through the bones.

The development of lines of trajectorial stress has been considered possible for a considerable time; but investigations of such phenomena are difficult when compared with the problems which confront an engineer in the design of a homogeneous body of simple symmetrical shape. The general opinion seems to be that it is possible to observe in sections of cancellous bone a pattern which does in general bear a resemblance to a trajectorial system.

That there is a perfection of design in the structure of the jaws is obvious when consideration is given to the considerable forces which can be transmitted through relatively thin walls of the maxilla. Though an insufficient number of bones have been examined to warrant precise conclusions, the evidence presented indicates the presence of the following features:

1. The areas of maximum thickness of the cortical layer of dense bone of the body of the dentulous mandibles are so disposed as to form a spiral running from the external oblique line forwards and downwards to the lower border, under the premolar teeth, then upwards and forwards on the lingual surface of the anterior region. This becomes reduced in the edentulous state when the thickness of this bone in all these areas tends to become more uniform.

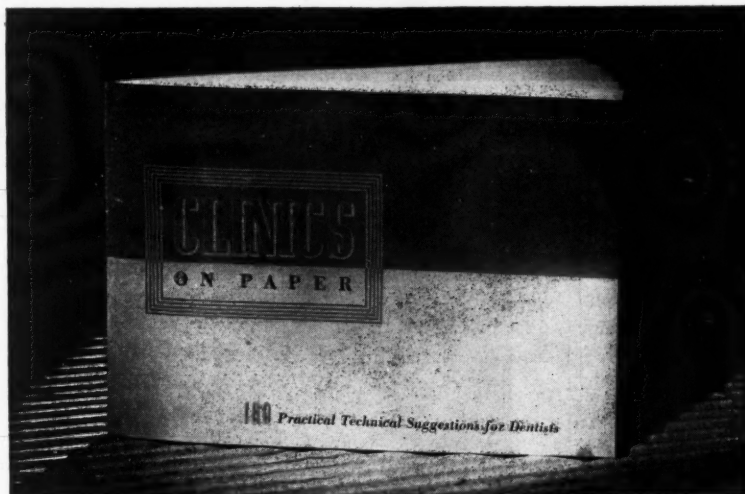
2. Some spiral formation of the cancellous bone of both the body and the ramus of dentulous and edentulous mandibles exists, but is less evident in the body of edentulous bones.

3. In the alveolar crest of the dentulous mandible, there is a system of trabeculae which, in a horizontal plane, interlaces the tooth sockets to each other, and to the adjoining buccal and lingual walls of dense bones. These trabeculae cross one another diagonally in the interdental septa.

4. In dentulous mandibles showing evidence of good masticatory function, laminae of cancellous bone, forming part of the so-called trajectorium dentale, may be seen in later-

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## CLINICS ON PAPER

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Five thousand dentists purchased volume one. A like number purchased volume two. And we feel confident this experience will be repeated with the new volume. It is a valuable reference booklet for any practitioner. It is thoroughly indexed with respect to suggestions for *Operative Procedures, Prosthetic Procedures, Roentgenographic Aids, Surgical Aids, Laboratory Aids, etc.* Colored tabs designate the various subjects.

Despite much higher paper and printing costs since volume two was offered the prices remain the same—\$1.00 to Dental Digest subscribers; \$2.00 to non-subscribers. We urge non-subscribers to refer to coupon for special combination offer which represents real value at little cost.

A typical letter concerning previous volumes . . .

NEW YORK

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al view to curve forward and downward over the mental foramen towards the lower border. This feature appears to develop with function, and its presence seems a logical outcome to the theory of trajectorial systems.

5. The density of the cancellous framework in the body of the dentulous mandible varies considerably, being less under the posterior than under the anterior teeth.

6. Loss of alveolar height in the mandible, whether due to loss of teeth or perhaps periodontal disease, is followed by an increase of cancellous bone in the body below that area, and coincident with this, if the molar region is affected, the inferior dental canal becomes more definitely walled.

7. The space enclosed by the walls of dense bone in the body of the mandible is much more uniformly and completely filled with cancellous bone in the edentulous than in the dentulous state. The pattern of this cancellous bone, as seen in transverse sections, alters with the change from the dentulous to the edentulous state. Furthermore, there are indications that the structure of this cancellous bone is related to the period of the edentulous state.

8. In the cancellous bone of the body of dentulous mandibles, as seen in transverse sections, the pattern of the principal trabeculae, below the tooth sockets, changes from one of mainly horizontal lines in the anterior region, to one of mainly vertical lines posteriorly.

9. While the principle trabeculae in the cancellous bone surrounding the sockets for the teeth in the mandible are mainly horizontally disposed, those in the maxilla are more vertically inclined.

10. The cancellous bone of both the mandible and maxilla has been mapped out; the inter-maxillary and median longitudinal sutures examined and Benninghoff's method of obtaining cleavage lines in the dense bone has been applied to the palate and floor of the nose.

11. Measurements of the thickness of dense bone of the edentulous maxilla show reduction of the tracts, on

areas of increased thickness, present in the dentulous bone, as well as general reduction in thickness.

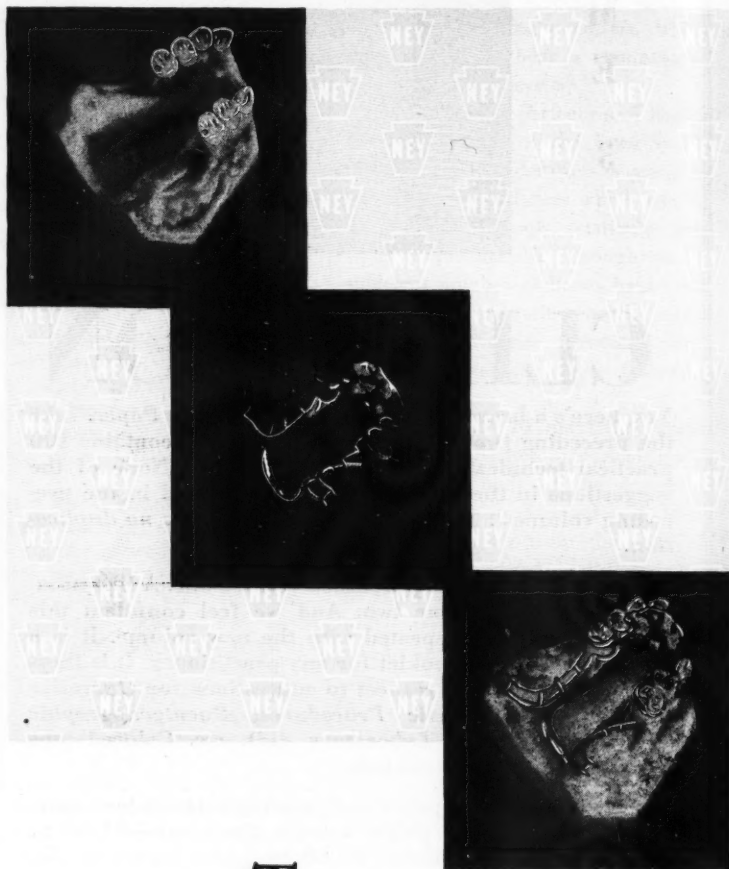
12. The stress created in the maxilla by masticatory forces is mainly directed along the following paths:

a) Upwards, forwards and medially, below the infra-orbital foramen, to the frontal process.

b) Upwards and laterally to the zygomatic process. Also, from here there is a subsidiary pathway to the posterior part of the frontal process.

c) Upwards and medially into the palate.

The forces along paths (a) and (b) are opposed by the frontal bone, though of course in the case of (b) the zygomatic bone is interposed being clamped between the frontal bone and the maxilla. The forces along path (c) may be opposed by similar but opposite forces from the other side of the palate, or by the buttress formed by the zygomatic process, zygomatic bone and zygomatic pro-



**T**HIS upper mouth — an Army hospital problem — was unusual because of its abnormally narrow arch. To minimize interference with the patient's speech the restorative appliance had to be planned to give the already crowded tongue as much freedom as possible. Primarily this meant that the anterior palatal section of the casting should be extremely thin yet strong.

Number twenty-eight  
of a series

ENY49

cess of the frontal bone. The concentration of stress in these pathways would be reduced by the pull of the anterior fibres of the masseter muscle on the zygomatic bone.

From *The Dental Journal of Australia* 18:383-406 (August) 1946.

### Goals of Psychiatric Principles in Dentistry

1. We can all obtain a working knowledge of personality structure,

a working knowledge of neurosis and psychosis.

2. We can begin to spot emotional disturbances of patients in our offices.

3. We can knowingly observe the gait, the voice, the hands, the eyes, the facial expressions, the little habits, the tics, the twitches, the many sensitive details which can unfold the whole patient.

4. We will be able to refer, without apprehension, disturbed patients to the proper agencies.

5. We can change our office procedures through such knowledge so as to better meet the needs of the patient.

6. Special techniques with drugs, with suggestion, and without any question, through the *guided interview*, will be included as part of our everyday armamentarium.

Our patients need our help. We must be prepared through training to give it.

Finally, the dentist himself, through insight into his patients as well as into himself, will begin to work comfortably, knowingly, and happily in difficult situations without anxiety and without destructive emotional output.

From Psychiatric Observation of Dental Patients, *New York Journal of Dentistry* 19:297 (August-September) 1949.

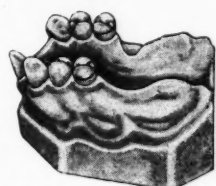
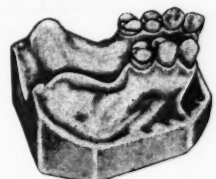
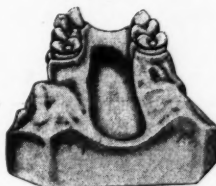
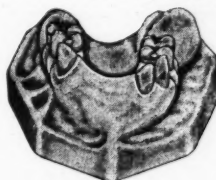
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The palatal bar was continued over the lingulum of the right cuspid and lateral and left cuspid to make a clean case, free of pockets that would trap food. The extra large saddles, joined by a posterior palatal bar, help to stabilize the restoration and reduce the amount of lateral movement during mastication.

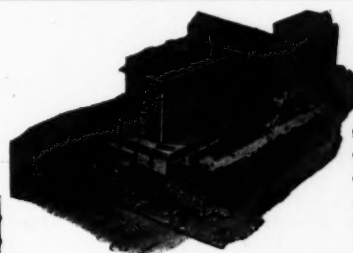
The four accompanying drawings show various aspects of the model with survey lines and resultant undercuts at the tilt that was used in designing and making this case.



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